

Audubon

JANUARY-FEBRUARY 1957

Magazine
FIFTY CENTS

PUBLISHED BY THE NATIONAL AUDUBON SOCIETY



GREAT
GRAY
OWL



Upon his retirement from the American Museum of Natural History in New York, **DR. JAMES P. CHAPIN**, for many years one of our leading ornithologists, and Past President of the American Ornithologists' Union, and his wife, Ruth (formerly Assistant Curator of birds in the Carnegie Museum) went to the Belgian Congo to continue studying birds of this region. His four-volume monograph on birds of the Belgian Congo is a model for works of this kind. Dr. Chapin is pictured with Kaporali, a Pygmy bird-trapper, at Tibibati Farm, Kivu District.

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James P. Chapin

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Audubon magazine

Volume 59, Number 1, Formerly BIRD-LORE

PUBLISHED BY THE NATIONAL AUDUBON SOCIETY

A bimonthly devoted to the conservation of wildlife, plants, soil, and water

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Cover: Photograph of a painting of a great gray owl (*Strix nebulosa*) by John James Audubon. This is the largest (in size) and the least known of all North American owls. Great gray owls occasionally drift down in winter into New England, Michigan, Wisconsin, and Minnesota. They range from the forested areas of central and western Canada to Alaska and the Pacific Coast; south in the mountains to central California (Yosemite). Great gray owls sometimes nest in Minnesota.

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Letters

Help for the Key Deer

"Thanks a lot for the *"Nature in the News"* story you wrote for the key deer, which was published in the September-October 1956 issue of *Audubon Magazine*. It has helped the key deer a great deal already.

"I received a letter from Rockford, Illinois, saying:

"Dear Glen: On behalf of the 5th hour English III Class of West Senior High School, I would like to congratulate you on your attempt to get a permanent home for the Florida key deer, also on being an Eagle Scout and interested in conservation. I am deeply interested in your attempt because it is an example of what is being done by Scouts throughout our great country.

"Recently my English teacher handed me a copy of the *Audubon Magazine* and asked if I thought the article about the key deer was worth while for our class to write on. Since then, our entire class has written to Congressman Bennett asking for the support of the bill which will give these tiny deer a permanent home. In helping you this way I hope that I have lived up to the part of the Scout law that states, "He is friendly to all and a brother to every Scout." I am very interested in how you got started on this project and a little of how you went about organizing it. Any information that you could give me will be appreciated. If there is anything that I, or my class, can do to help you in your cause, please let me know about it."

Scoutingly yours,
GERALD M. BAKER

"It was a big thrill to me to know a whole class is interested (and wants to help) in their protection. Thanks again for everything and all the help with my project."

GLEN T. ALLEN

3565 N.W. 36th Street
Miami 42, Florida

EDITOR'S NOTE: The Key Deer Refuge Bill H.R. 10332 "died" in the 1956 Congress, without any action being taken on it. We understand that it will be revived in 1957, at which time we hope to report to our readers about it.

The *Audubon Magazine* is better every issue. I am proud to be a member of the National Audubon Society.

BETTY LAFEVER
Butler, Missouri

Albino Birds in Wyoming

On September 10, 1956, a fellow member of the local Audubon Club phoned that among a flock of robins feasting in her Russian olive trees was a bird with the appearance of a robin except that it was white, with some gray feathers on its back, and some "robin red-breast" spots on its breast.

Upon observing it through binoculars we found it to have black eyes, black feet and legs—apparently not a true albino.

On September 19, the albino robin appeared at my pool, bathed leisurely and has not been seen since. I assume it is now southward bound.

On Sunday, September 23, a friend who owns a large sheep ranch reported that he and his son had flushed an albino meadowlark three times that morning—so they were able to observe it quite closely. Now I have just read of an albino barn swallow, in the Sep-

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tember-October *Audubon Magazine*, p. 196.

Can this be *the year* for albino birds?

MRS. ROBERT D. HANESWORTH

President

Cheyenne Audubon Club

Cheyenne, Wyoming

Comment

We don't believe that albino birds occur more abundantly in some years, than in others, although this could not be determined without detailed field studies of albino populations of wild birds over a long period of time. The appearance of an albino is owing to chance or to the genetics of birds in which albinism crops up occasionally as it does in practically all animals in the wild. Apparently, in certain species of birds, albinism is more common than in others. It seems to be chance that allows us to see albino birds more frequently in some years than in others, for example, the chance that the conspicuous white bird, whether a true albino or not, has escaped predators, and the chance that we are afield frequently enough to note them when they are about.—The Editor

A "Wise" Hairy Woodpecker

One morning this past fall, I took a walk along a wooded path on a hilltop in the Highlands of the Hudson. I heard a noise that sounded like a carpenter at work. I stood still, and a male pileated woodpecker suddenly alighted on an upright dead tree nearby, and began hammering with his big bill, up and down the trunk. A male hairy woodpecker alighted on the dead tree, immediately after the pileated woodpecker arrived, and it was obvious that he was following the larger bird.

As the big pileated woodpecker moved about, hewing pieces of wood out of the dead tree, the hairy woodpecker followed him. He pecked in the same holes made by the big woodpecker and seemed to be eating insects of some kind. Apparently he was accustomed to following the pileated woodpecker, and it seemed to me that this was not his first "second-hand" meal.

MRS. FREDERICK OSBORN

Garrison-on-Hudson
New York

Correction by Dr. Hall

Many thanks for publishing "*The Sanderling*," in the November-December 1956 issue and for the magnificent illustrations by Walter Ferguson.

A single correction, however, seems to be necessary. On page 270 in the editorial note, the last sentence reads: "Dr. Hall is president of the Audubon

Society of Rhode Island." I am not president but one of the honorary vice-presidents of that organization, an honor conferred on me largely by virtue of your having published articles by me in *Audubon Magazine*.

HENRY MARION HALL

South Gulfport, Florida

Effect of Cold Spring of 1956 in Chicago Area

In your July-August 1956 issue, under "*Nature in the News*" you quote from the *New York Times*, "*Frost Blights Crops in Northeast*," followed by your own comment, "*Scarlet Tanagers in Trouble*"; also in the September-October 1956 issue, there is an article on this subject (page 233), by Myrtle Broley.

I would like to add that the same conditions—cold and a lack of insect food—prevailed in the Chicago area. We had a prolonged cold spring during April and early May 1956—temperatures in the 30's and 40's—and a frost the third week in May. On May 11, a sudden change took place; winds swung around to the south and a sudden downpour followed. In Palos Hills we saw a flock of 50 male indigo buntings, 20 male scarlet tanagers, 100 goldfinches and one dickcissel sitting on clods of earth in a ploughed field.

On May 12 and 13 there was an enormous influx of warblers and vireos. The peak was reached May 14 when at Long John Slough we saw six Baltimore orioles on the ground along the road and 12 male scarlet tanagers sitting on giant ragweed stalks of last year. We had lunch in a honey-locust grove and the warblers were so numerous and lowdown we could scarcely eat. We estimated more than 100 each of bay-breasted and chestnut-sided. Others most abundant were Wilson's (black-capped), and yellow warblers.

That same week we had rose-breasted grosbeaks at our feeders in the yard, a male scarlet tanager at the birdbath for the first time, and Canada warblers on the lawn leaping straight up in the air to catch insects.

Some 25 birds were brought in dead to our bird class at the Morton Arboretum, Saturday, May 19. [Apparently these had starved to death—Editor]

MRS. ISABEL B. WASSON

River Forest, Illinois

A Hare About the House

I have greatly enjoyed the article, "*I Live with a Black-tailed Jack Rabbit*," by Henry Paul Jackson, published in your September-October 1956 number!

I wonder if Mr. Jackson has read the book "*A Hare about the House*," by Cecil S. Webb, published in London by Hutchinson & Co., 178 Great Portland St., in November 1955. If not, I

am sure that he, and some of your readers, may delight in it, as I have.

IZETTE DE FOREST

Marlborough, New Hampshire

Audubon Magazine in the Schools

Each copy of *Audubon Magazine* provides me with so much fine reference material, not only for my own use, but to pass on to the many school children I meet in our 10 elementary schools at Amsterdam, New York. There are many ideas, too, to pass on to the teachers, with whom I work in teaching and supervising Science and Nature Study.

I rely on the fine book reviews in *Audubon Magazine* to give suggestions for books to be added to our school library shelves and to personal friends who ask me very often to suggest gift books.

The variety of topics in the magazine, the attractive manner in which it is put together, and the ease with which one finds accurate and reliable information, leads me to say how much I enjoy it, and to tell you again that yours is a job well done.

AMANDA R. POWELL

Curator of Walter Elwood Museum
and Special Teacher, Amsterdam,
New York, Public Schools

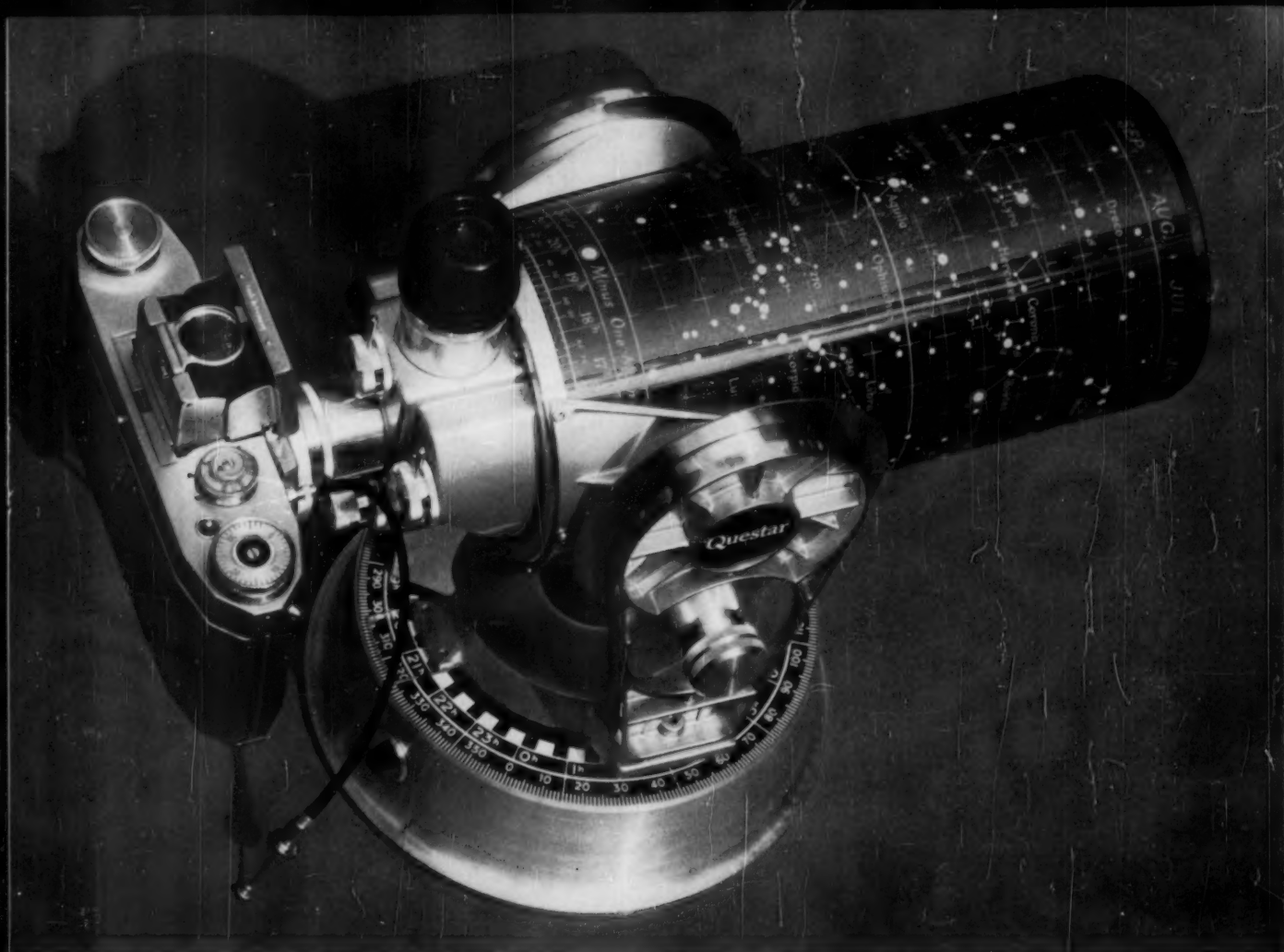
Corrections to Nova Scotia Article

Knowing that we would be going to Nova Scotia in the late summer of 1956, we clipped and saved the article, "*Adventures for Bird-Watchers in Nova Scotia*," which appeared in the January-February 1956 issue. We found several things in Nova Scotia that were at variance with the information in Dr. Lewis's article.

On page 32, Dr. Lewis stated that the nesting colony of European cormorants on the west side of the mouth of Antigonish Harbor is "easily reached." The 1956 Nova Scotia Tour Book states "at Crystal Cliffs, 8 miles from Antigonish one of the many nesting colonies of E. cormorants may be seen, etc." We took the road indicated, but in eight miles had seen nothing of any Crystal Cliffs. At 9½ miles we stopped a boy of about 12, who said he knew where the birds were and watched them regularly. He offered to take us. We soon passed the Geology Centre, named Crystal Cliffs, and about ½ mile beyond there stopped at a spot which had an open, sloping field at the right, and a tar-papered, small house with a red roof in a field at the left. We walked up through the field and into one of the most tangled and hard-to-negotiate woods we ever encountered. Eventually we came out to the top of the cliffs, and saw four birds. However, the cliff top is very dangerous, as the turf overhangs the cliffs. The boy, Jimmy MacKenzie,

Turn to Page 6

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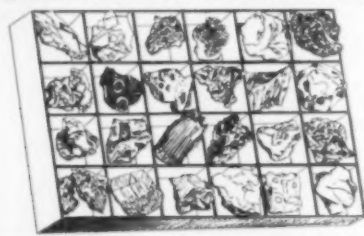
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said the best way to see the birds would be to take a fishing boat from Morris-town (just beyond) on a Sunday when the men were ashore and available. He also said late May and the first part of June, when they were nesting, would be the best time to see the colony.

We were greatly intrigued with Dr. Lewis's reference to the Bird Islands, where, on page 33, he said "the best approach . . . is from Breton [also called Briton] Cove." This same information was given on page 120 of the Nova Scotia Tour Book. However, the storekeeper at Breton Cove said no boats had gone out to the islands for years and none were available or had been for a long time. She further stated that several other people had come in to ask about such boats, and she couldn't understand why they did so. She said we might find a man to take us to New Campbellton, so we took off for there, as we were determined to find a way of going. We went to Englishtown, where the ferrymen pointed out an average-sized fishing boat, which they said a Mr. Walter Stevens used to take people out. He, however, was away for the day. We then drove a very poor road over Kelly Mountain to New Campbellton, which consists of two houses and the ferry terminal to Big Bras d'Or. At New Campbellton, we found out from the Terry family, who live in the red house, that a Mr. Dan Alec Clark of Cape Dauphin, three miles up the cape, took people out sometimes. A telephone call elicited the fact, which was obvious by then, that it was too late and too rough for him to go out there, as he had only an open boat. However, he is a possibility under better conditions.

At Big Bras d' Or, we were directed to Mr. Richard Ahle, proprietor of Mountain View Lodge (telephone Boulevard 7-22). We found Mr. Ahle and were delighted with his little inn (newly furnished); his interest in the birds on the islands; his acquaintance with them and the observation situation, and with his honesty. We especially wanted to see the auks and puffins, and he frankly said he had seen none on his last two trips, and that the time to see them was much earlier in the late spring and up to mid-August. At this time he had only an open fishing boat with no facilities, but he assured us that he would have a proper cabin cruiser by next summer, and would be fully prepared to take parties out to the islands. In fact, he hopes to make quite a business of accommodating bird-watchers, and we advised him to advertise in *Audubon Magazine*, which we hope he may do. Although we did not go to the Bird Islands, as we wished to do, at least we KNOW where we can find a man who can take us in a good boat, and furnish

simple but adequate lodging and meals. We hope to go up in June, or early July 1957, and will certainly patronize Mr. Ahle.

MARJORIE CAMP
BARBARA E. JOY

Bar Harbor, Maine

Reply to Miss Camp and Miss Joy by Dr. Lewis

Today's mail brought me a copy of your letter of September 16, 1956, to John K. Terres, Editor of *Audubon Magazine*, concerning some of your experiences in seeking Nova Scotia bird colonies last August. It is indeed unfortunate that you ran into difficulties in trying to visit two places that were mentioned in my article, "Adventures for Bird-Watchers in Nova Scotia."

Although interesting birds are to be seen in Nova Scotia at all times of the year, the opportunities for observation of birds in the latter part of August differ markedly from those in the first part of the summer. By late summer, of any year, many sea-birds have brought off their young and have abandoned the sites of their breeding colonies.

You were perhaps unfortunate in your youthful impromptu guide near Antigonish. You state that you drove past the Geology Centre named Crystal Cliffs, a comparatively recent institution. If you had turned in there, you would, I am sure, have been given local directions with pleasure and would have found a good path to the top of the cliff from its southern end. The authorities at the Geology Centre take a strong interest in the colony of European cormorants and try to preserve it from molestation. The cliff is composed of soft rock and erodes rapidly, so that observable changes in its details occur rather frequently. The cormorant colony formerly extended farther north along the cliff than it now does. Last summer, whenever the tide was low, it was possible, with a little wading in shallow water, to get near some of the nests by approaching along the base of the cliff from the southern end.

On July 19, 1956, when I visited this colony, some young of the year were already on the wing, so it is understandable that not many birds were to be found at the site in late August.

As for the best port from which to leave for a trip to the Bird Islands, I may say that I relied on the advice of Robie W. Tufts, of Wolfville, Nova Scotia, President of the Nova Scotia Bird Society. The many years that Mr. Tufts spent as Chief Federal Migratory Bird Officer for the Maritime Provinces gave him unsurpassed familiarity with details relating to interesting bird colonies in Nova Scotia. In his letter of February 9, 1955, he says, ". . . the best approach to Bird Islands is from Breton Cove."

I am glad to know that you were pleased with your contact with Richard Ahle, of Mountain View Lodge, Big Bras d'Or. I am in touch with Mr. Ahle and am happy to learn that my impression (that he provides a satisfactory service for visitors who desire to visit Bird Islands) is confirmed by your experience. It should be pointed out, however, that Mr. Ahle did not begin to provide any service for such visitors until spring or early summer of 1955, after the manuscript of "Adventures for Bird-Watchers in Nova Scotia" was accepted for publication by Audubon Magazine.

At present I know of no better way of making a trip to Bird Islands than to make use of Mr. Ahle's facilities. He will certainly be encouraged by me to advertise in Audubon Magazine and I hope that he will do a thriving business, with satisfaction to all concerned.

I also hope that you had pleasure in seeing some Nova Scotia birds and will have a thoroughly enjoyable bird-watching trip to this province in 1957. In June or early July, when you propose to come this way next year, you should find conditions much more suitable than in late August. In my opinion, June is preferable to early July.

May I say further that if I can help you in any way to find the birds you seek in Nova Scotia, I shall be very happy to do so, either by correspondence or by interview. West Middle Sable is just off Route 3, a little more than 100 miles from Yarmouth.

HARRISON F. LEWIS

West Middle Sable
Shelburne County
Nova Scotia

Audubon Birds on Postage Stamps

I have been a collector of birds on postage stamps for the past 10 years or so and have succeeded in compiling quite a complete collection which well satisfies my keen interest in both birds and stamps. In November 1956, I received from the stamp dealer, who supplies me with new issues, a selection which included two stamps of a new regular issue of the Virgin Islands. Upon seeing the stamps, a \$2.40 value depicting a brown pelican, *Pelecanus occidentalis*, and a \$4.80 value depicting a frigatebird, or man-o'-war-bird, *Fregata magnificens*, something told me that the designs were not new, that I had seen them somewhere before. I couldn't remember where for a while; then I suddenly had it.

Going to my study I took down my well-worn copy of Audubon's "Birds of America" (the edition by William Vogt, published by Macmillan Co. in 1937), and in a moment I cleared up my suspicions. There were the originals of

the two stamps! The brown pelican is Plate #251, copied exactly by the designer of the stamp as to the pose and details of the bird, but with Audubon's branch and leaves changed into a bare perch. The frigatebird is Plate #271, depicted in exactly the same dramatic but rather contrived and "unnatural" looking pose in which Audubon so loved to portray his spectacular species—e.g., the golden eagle carrying the hare, Plate #181. There are other examples of our modern "bird stamps" being copied after famous bird painters; for example Gould, but this is the first

Turn to Next Page

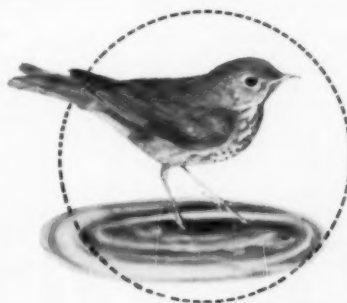


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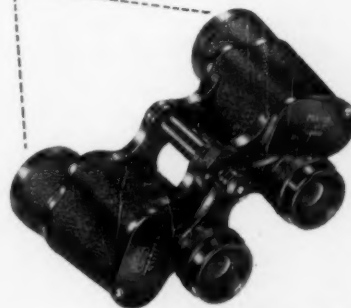
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Roger Peterson's BIRD'S-EYE VIEW

example of which I am aware of the use of Audubon's work for this purpose. And what a sign of Audubon's vitality and influence that a stamp designer of 1956 should use two of his famous paintings, made over a century ago, rather than those of Fuertes, Jaques, Peterson, or any one of the host of bird portraitists who have followed in his footsteps!

May I take this opportunity to congratulate you and your colleagues for the increasingly fine job you are doing with *Audubon Magazine*? I have been a subscriber since the early 1940's and am one of the many readers who think that the magazine is "bigger and better than ever."

MR. BEVERLY S. RIDGELY
Assistant Professor of French
Division of Modern Languages
Brown University
Providence 12, R. I.

Cormorant Accident

As a new ensign, my first job aboard ship was to control the four large 36" searchlights during night target practice. In trying to keep a distant target illuminated from an unsteady ship, we had to cope with the blinding effect of our lights and partial asphyxiation from smokestack gases. No one liked the job; no one was ever satisfied with our performance.

One night things were worse than usual. Over my telephone headset, I got orders from several officers and unpleasant remarks from one—including a warning that if I didn't get things straightened out in a hurry, he would come up and do so personally.

A few minutes later I heard the trap door to our platform open, saw a dim figure of an officer emerge, and heard the door close again. A moment later I received a staggering blow on my chest that knocked me backward against the railing. I was furious for I thought that someone had struck me. I stumbled, and in regaining my feet, I picked up—a dead cormorant! Attracted and blinded by our powerful searchlights, it had flown into me. Had it hit anywhere but against my telephone chestplate, its bill would have inflicted a nasty stab. I can only guess at its speed—perhaps 40 m.p.h.—but I can tell you, this bird packed quite a wallop.

BRUCE McCANDLESS
Rear Admiral, U. S. Navy (Retired)
Claremont, California

Mystery Bird

We saw the young bird in the photograph standing quietly on a secondary road in central Vermont. It refused to move, even after being nearly run over by a car. We finally picked it up and set it on the stump where it was photo-

Continued on Page 41

Summer Reflections

WHEN James Fisher and I had finished our journey around the perimeter of "Wild America" we experienced a letdown; the marathon trip had sunk us. It was only after a lapse of some months that we surfaced, able to assess what we had seen and to write about it.

Every summer's field work follows a similar pattern. It is so good to set foot in strange places and, after two or three months, so good to get home. When my family asks me what I have seen and what I have done I can tell them only if I do so immediately. But after a day or two the impressions fade, to return only after several months have passed.

Now, during the winter, visions of Spain return. In a previous column I told briefly of my experiences with 10 English ornithologists in the Marismas at the mouth of the Guadalquivir. I neglected to mention the most important item of all, the vast increase in the herons at the Coto Donana. In April, 1952, when Guy Mountfort and I made our pioneer foray into this wild paradise, we estimated that there were about 4,000 herons of three species in the pajarrera—mostly cattle egrets and little egrets, with a scattering of night herons. It was during the very week of our visit that the first cattle egret in the United States was collected in Massachusetts. The Gonzalez family who hold title to these lands in Spain guard the birds carefully and it is paying off (I remember the four eggers with baskets who tried unsuccessfully to raid the heronry one morning).

This past season, 1956, the herons had established three colonies and the number of birds approached 14,000. The total on the 15th of May was 6,910 nests. Of these, roughly 3,000 nests were of little egrets (which are much like our snowies) and about 2,000 belonged to cattle egrets. Night herons totaled more than 1,800 nests and the squacco herons made up the remainder—between 60 and 90. I must not forget the 40 nests of gray

herons (like our great blue) in two huge cork oaks near Colony C. The sixth species of heron (not including the bittern which we heard booming daily), the purple heron, nested in small groups among the reeds of a lake known as Santa Olalla.

Hérons in Spain are very vulnerable to humans and also to jackdaws (if they try to nest in the same cork oaks with the "daws"), but when protected their numbers mount rapidly. This universal ability of herons to recover was the one thing above all others that put the National Audubon Society on the map during the early days of its history.

Although a single glossy ibis was seen once or twice in Colony B, we apparently overlooked the rarest bird—perhaps it was not there at the time—a West African reed heron, discovered, photographed, and collected three or four weeks later by the Spanish ornithologist Valverde. It was the first record of this species for Europe.

Umkirch Revisited

Storks occupied about 17 nests on the Coto where I took some pictures, but I waited until I reached the Rhine Valley before I concentrated my heavy artillery, a new 400 mm. Kilfitt lens, on these red-legged, red-billed giants. I hunted up my young friend, Wolfgang Schnetter of Freiburg, who had helped me with the storks in 1954. The little old Catholic Church at Umkirch (see *Audubon Magazine* Jan.-Feb. 1955, page 6) was being repaired and although it was sheathed in scaffolding the town storks went about their business unperturbed. From the open slat in the tower, where I flushed the tenant barn owl, I aimed my Kilfitt at the nest on the roof of the nave. For two days I worked with my cameras, recording on Kodachrome the greeting displays, the feedings and all the many activities of this family. As in 1954 one of the days was a Sunday and while the congregation converged on the church I was deafened by the clanging of the four huge bells which summoned the people to worship. There

was no escaping the bells which shook the tower every hour on the hour; smaller bells tolled the quarter hour. At least they enabled me to keep a rough timetable of the storks' visits. The change-over varied from about one hour apart in the morning to more than two hours in the afternoon.

There were three young in the nest instead of the usual four. One had died and was trodden into the fabric of the platform. Once or twice the female tugged at the corpse, trying to dislodge it from the sticks which held it fast. Dr. Kuhk at the old castle at Radolfzell near Lake Constance told me that many storks had lost one of their young this year because of the late cold season. Several of the nests which I visited with young Schnetter in the course of his banding held three live young and one dead.

Although the 1956 season was a little below the average for stork success, 1955 had been a good year. But people in the Rhine Valley are still worried about the future of their storks. In the Alsace, on the French side of the valley, one town tried to entice passing storks by putting up numerous platforms and even piles of sticks. In Switzerland where there have been no nesting storks since 1950 a number of young storks from Algeria were planted and reared. Last I heard, at a meeting of French ornithologists in Paris was that the experiment hadn't worked.

Gannets on the Bass

It is quite a far cry from the Lower Rhine Valley to the Firths of Scotland. In June I went to Edinburgh, ostensibly to attend the IUPN meetings, but actually to visit again the gannets on the Bass. Audubon himself visited Bass Rock more than a century ago, and it is doubtful if this spectacular rock at the mouth of the Firth of Forth has altered one bit since his time. The light and the buildings may have been remodeled, of course, but the gannet ledges are almost certainly as he saw them and perhaps as the invading Danes saw them centuries earlier. A cement walk, however, now goes over the crown of the island, which is no disturbance to the birds that nest on the sheer cliffs on the east side and on the steep slopes of the west face. This is by all odds the easiest gan-

net colony to visit, I might point out. Should you be going to Scotland, spend a few days at North Berwick. Daily, weather permitting, boats put out from the town landing, carrying parties of tourists around the rock for a close look at the seabirds. To actually land on the rock as I have done a number of times requires special permission (unless you are a member of the Scottish Ornithological Society) and a special boat. When I edit my new film I shall be showing the Bass and its birds to Audubon Screen Tour audiences; also the storks of Umkirch, the pajarera of the Marismas, the flamingos of the Camargue, the spoonbills of Holland, and all the other birds and wild creatures I encountered on my wanderings around "Wild Europe."

But meanwhile, Africa beckons.

—THE END

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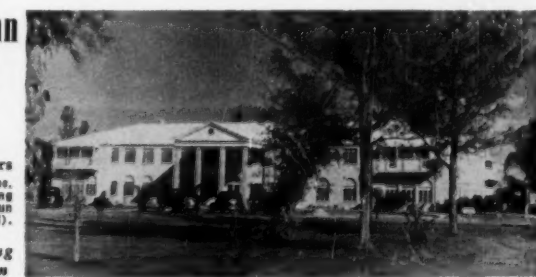
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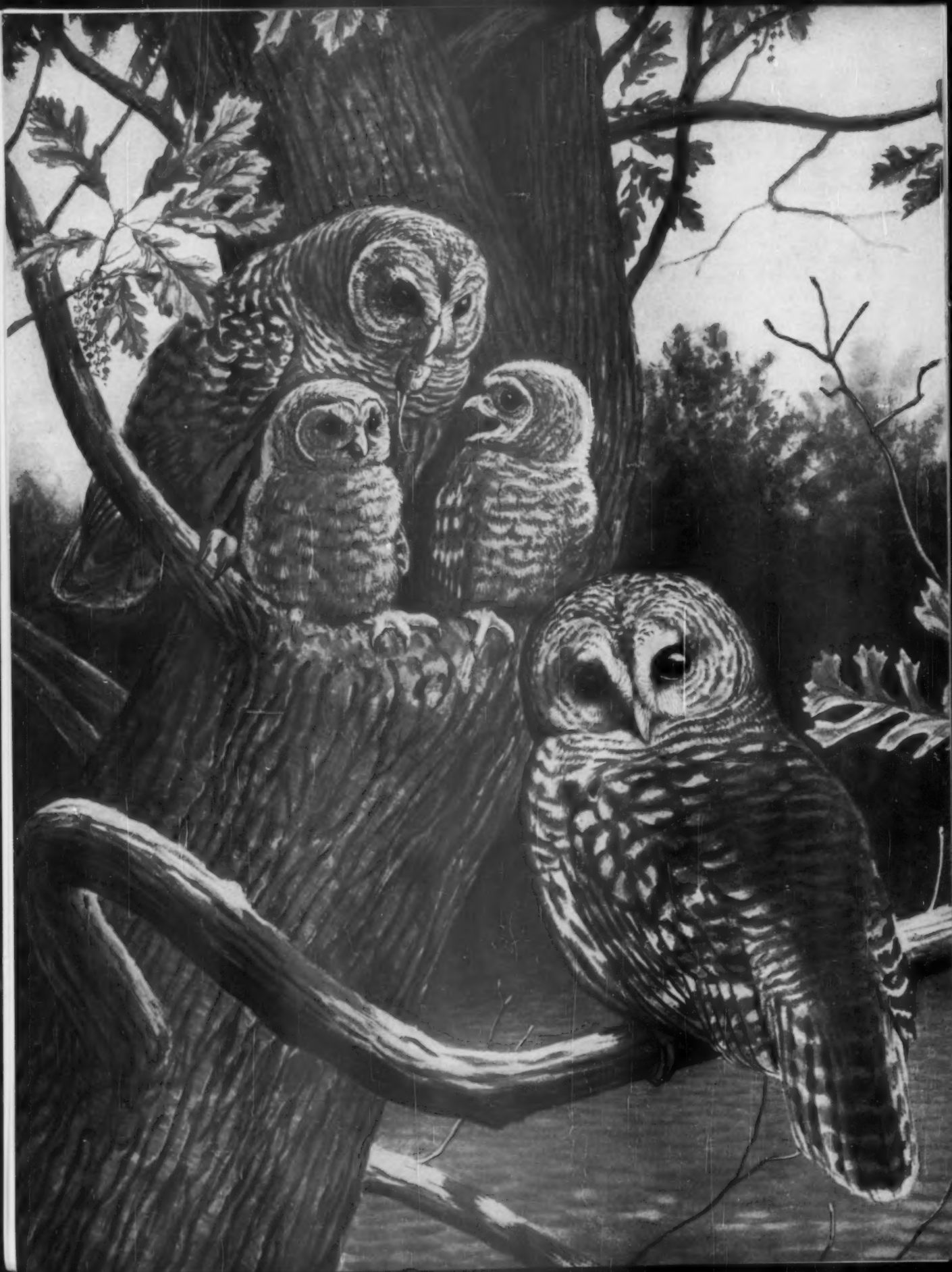
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Our "Minnesota" Barred Owls

By Rachel D. Tryon

THE swift and silent flight of a barred owl is a miracle of grace and agility. A large bird, rather awkward looking when it is perched on a branch, it will glide through dense woods so that not a leaf moves with its passage. If you examine the area through which it has flown you simply cannot see where there has been room for the four-foot wingspread and the heavy-looking body to pass. Its appearance of heaviness, caused by its thick, fluffy feathers is deceptive for it weighs slightly less than two pounds.

Our Minnesota home is on a ridge between two lakes. One of our windows overlooks one of the lakes and the top of a steep, wooded slope so that the tips of some of the trees are at our eye-level. The main branches of others, especially one large bur oak halfway up the slope, are just in front of the window. From the window, we watched a pair of barred owls bring up two youngsters. All the while they were apparently oblivious of our presence.

The accepted idea that all owls are exclusively nocturnal is, of course, not true. Authorities say that the barred owl sees better in the daytime than at night and that they also hunt more in the daytime. Our observations bore this out. Our pair hunted from the old oak, fished from a cottonwood tree which leans over the water, and sat for hours right in front of our window in a pouring rain during the day. They also fed their young, hooted, called, and cackled in broad daylight.

From our human point of view, barred owls are poor housekeepers. They are messy and careless about their nests, and are not very particu-

lar about their place of nesting. They probably prefer a dry, hollow tree, but when one is not available, an old squirrel's leaf-nest, or an abandoned nest of a crow or a hawk will do. Hollowed-out and patched with a few additional twigs, the barred owls may line the old nest with pine needles.

Red-shouldered hawks and barred owls seem to have an affinity for each other. They use each other's nests and even, in one amazing instance, laid eggs in the same nest. We have not observed any such chumminess, though there are red-shouldered hawks every summer in our vicinity.

Barred owls usually lay two or three eggs. These are white, not glossy, and on the surface feel a little rough. We could not see the eggs of our particular pair but the parents hatched two owlets. The nest was a hole in the old cottonwood, 50 feet up from its base. The nesting hole was over the water and was completely inaccessible to us. But we could watch the comings and goings of the adult owls from the first part of April until the first part of June. During this time while one owl was on the nest, the other perched nearby and stared about, or it slept, preened its feathers, or occasionally uttered its characteristic eight hoots, "*Who cooks for you! Who cooks for you-a-a-all!*" — the "*you-a-a-all*" sliding down the scale despondently.

One morning at breakfast we noticed a squirrel chattering, sitting on the trunk of the old cottonwood very near the nesting hole. Suddenly one of the barred owls appeared

silently out of the woods, flew directly at the squirrel and knocked it quickly and neatly off the tree. Then it returned to the tree and sat for a long while preening its feathers or gazing all around. Since the young owls were in the nesting hole, we did not see them in their first white, downy stage which lasts about three weeks. Nor did we see the youngsters come out of the nest. But on the afternoon of June 5, we came home and saw a young barred owl facing us in the bur oak. It was very gray, very fuzzy, quite solemn, and extremely unsteady on its feet. When it raised its wings, as it did periodically, and staggered a few steps along the horizontal branch, it displayed what looked like a pair of ruffy white panties that hung from its waist to its ankles. It also had a disconcerting habit of leaning forward a little and moving its head in a circular, clockwise motion, its face toward the front all the time, as though its head were mounted on a cam shaft. It seemed about one-half to two-thirds the size of the adult and had no tail feathers at all. It was probably about four to five weeks old.

One day, to our delight, we saw the parent appear with a mouse in its beak. It put the mouse in the baby's beak and flew off immediately without waiting to see how its offspring would manage the mouse. The young owl was not perturbed, however. It lowered the mouse to the branch on which it stood, put one of its yellow claws on it to steady it, then, suddenly, swallowed it in one enormous gulp. Afterward, the owl shuddered slightly, blinked, and resumed its solemn stare. The next time that the parent owl came to the tree it was getting dark so that

Illustration of barred owls
by Walter Ferguson.

Continued on Page 30

ALAFIA BANKS — ISLAND ROOKERY

Within 25 years, nature transformed a barren, spoil-bank into a famed ibis rookery. It is guarded by the National Audubon Society.

By James J. Cox

JUST a quarter of a mile away from a big industrial plant near Tampa Bay, Florida, thousands of wading birds have found a home on a little island. Where there was only salt water more than 25 years ago, the island, of some 20 acres, is now occupied by a rookery of about 20,000 nests. The nests are so close together in some places that an unfolded newspaper would cover three or four of them. This sanctuary for American egrets, white ibises, of oystercatchers, herons, terns, and other birds is called Alafia Banks. The big rookery island was dredged up and created from the floor of Tampa Bay.

Fred Schultz, employed as a warden by the National Audubon Society, and a U. S. Game Warden, told me about it on our way out to the Alafia Banks in his boat. He had just met me on shore for a guided tour to the island. Fred pointed to the Tennessee Corporation plant on the mainland directly opposite the island. "They needed a deep water channel so that ships could come right up and unload cargo. The Alafia River had deposited a lot of silt in the bay and had made it pretty shallow." The dredging operation made the island.

For several years, the island was only a heap of mud and sand, bare of plants, but gradually, trees and shrubs took root and began to grow, probably starting from seeds dropped by birds. After the foliage appeared the birds started nesting in it. The National Audubon Society saw the possibilities of the island as a bird rookery and got the Tennessee Corporation (U. S. Phosphoric Products) to grant them a lease to the island.*The land lies

in Hillsborough Bay, 11 miles south of Tampa, and across Tampa Bay from St. Petersburg. A few hundred yards to the west, banana boats and ocean-going vessels follow the shipping lanes.

There was a sharp breeze blowing, piling white caps on the head of the blue Gulf, as we rounded a white sand point and headed into a calm, crescent-shaped harbor. Schultz shut off the outboard motor and we glided quietly to a wooden landing built atop poles that stepped out into the water. Above the splash of green that was the island hundreds of white-feathered forms wheeled and turned. The yearly reunion of the bird clan was in progress. Waiting on the dock to meet us was Schultz's assistant during the nesting season, T. J. Thompson, a retired marine engineer.

After docking, Schultz led the way down the narrow trail toward the nesting areas located in the center of the island. We walked Indian file through the thick mangrove which

grew down to the water. In some spots we waited for the waves to recede so we could get by without wetting our feet. "Coming back, the tide will be in and we'll have to wade it," Schultz said.

Along the trail, which Thompson had hacked out, there was a density of growth that provided constant shade. There were sabal palms and buttonwoods crowded together, and baccharis, dalbergia, and lantana intermingled. From the depths of the growth there was a pressure and surge of life caused by the constant movement of birds. Twittering noises were punctuated by frog-like croaks and harsh screeches. Some of the birds sounded like grating hinges, or they gave voice to guttural belches.

"Here is something unusual!" Fred Schultz said as we overtook him where he stood on the trail. He pointed to an oblong ball that was wrapped around the trunk of a small sapling, about a foot above the ground. It looked as though it were made of papier-mache. "Watch what happens," Schultz said. He thumped the ball with his finger, and instantly the surface of it swarmed with ants. They flowed out of tiny holes in the nest, making red streams of life. Here was a remarkable intelligence exhibited by a lowly creature. The ants had carried dried grass, mud, and small sticks, to build a home up on the trunk of the sapling where it was safe from high water washing over the ground.

Another few feet along the path, Schultz stopped and looked intently at a low mangrove tree. He motioned for me to approach slowly. There sitting on a twig with utter unconcern was a baby bird about two inches long. It had apparently just hopped out of the nest. "If you look around," Schultz said, "you'll see the mother — a little prairie warbler." Fred was right. In a moment a bright tuft of yellow flitted through some branches nearby.

Near the beach again, Thompson kicked the gas tank of a jet airplane that had washed upon the shore. It has probably fallen from an airplane

VISITORS TO ALAFIA

Only authorized visitors are permitted to visit the Alafia Banks, which means only those who have obtained written permission from the National Audubon Society's headquarters at 1130 Fifth Ave., New York City. Prospective visitors should plan to travel to the island with Fred Schultz during high tide when the channel between the Alafia Banks and the mainland is navigable. After permission has been obtained to visit Alafia Banks, Fred Schultz should be notified, perhaps two or three weeks in advance of the day you plan to visit the island. Write or wire to him at Route 3, Box 188, Tampa, Florida. His telephone number is Tampa 43-2313.

—The Editor

*The Tennessee Corporation of U. S. Phosphoric Products, leases the Alafia soil bank, which is the subject of this article, to the National Audubon Society for \$1.00 a year.—The Editor



A flock of white ibises flying over Alafia Banks. Photograph by Allan D. Cruickshank.

Signs on the man-made island warn unauthorized visitors to keep off. Photograph courtesy of the Tampa News Bureau.



stationed at MacDill Field a few miles across the bay. "The jets don't bother the birds," Thompson said, "but some helicopters that flew low over the island gave them fits."

"Say," Thompson said to me, "I just happened to think of something. This morning I noticed a nighthawk* nesting on the ground about 50 feet south of my cabin. Let's take another look."

We sneaked quietly to the place indicated by Thompson. There on the bare ground, 15 feet away, was the nighthawk. She was a perfect blend with the earth, and it was her only protection. Another step farther and the bird fluttered away. "Watch her," whispered Schultz. The small, brown bird flailed the air and fell to the ground a short distance away. She seemed to be injured. "Walk toward her again," Schultz said. I did, and away she went in that crazy flutter.

* Probably the Florida nighthawk, *Chordeiles minor chapmani*. This bird is a subspecies of the eastern nighthawk, and is a common summer resident throughout Florida. It was given its subspecific Latin name in honor of the late Dr. Frank M. Chapman, who was for so many years associated with the American Museum of Natural History.—The Editor

About Fred Schultz

Fred Schultz has been a warden of the National Audubon Society in the Tampa Bay area of Florida since 1950. He was first employed by the late Dr. Herbert R. Mills, a pathologist of Tampa, Florida, who hired Fred to protect the bird rookeries on Whiskey Stump and Green Key (see the article about Fred Schultz called "King of Whiskey Stump," in the November-December 1954 issue of *Audubon Magazine*). Dr. Mills believed that protection of the Tampa Bay bird colonies, which had been badly depleted by local fishermen, would improve fishing there rather than detract from it. The growing colonies of ibises, herons, and other birds that increased with protection, and their fertilizing effect on the waters of Tampa Bay, have proved that Dr. Mills' prediction was correct. A few excerpts from the weekly reports by Warden Fred Schultz, sent to the National Audubon Society's headquarters, have been included here to give our readers a suggestion of the birds and their activities as observed by Warden Schultz throughout the year.—The Editor

"I think she's hurt," I said.

Schultz laughed. "She's a good actress. She wants you to think that she's hurt so you'll follow her and be drawn away from her nest."

We looked at the two whitish eggs, mottled with specks of brown and buff. They were no bigger than small pecans.

"The nighthawk is a valuable bird to the farmer," Schultz said, "and they really aren't hawks at all. Belong to the whip-poor-will family."

A few hundred feet south of Thompson's cabin we really entered birdland. There were dozens of stately white ibises perched atop palms and clinging to mangrove branches. Their long, curved beaks and clean legs gleamed bright red in the sunlight. Now and then one would stretch its two-and-one-half foot spread of wings and emit a piercing squawk. There was a constant change in the bird colony as different ones came to replace those returning to the nests or searching for food. We moved to within about 12 feet of them before they took notice of us. They seemed to know that they were protected.

"You won't often find a place where you can get this close to them," Schultz said.

By looking carefully through the thick undergrowth I could see many blackish, furry shapes bobbing and weaving. These were the baby ibises. Schultz said that they stay a grayish-brown color until they are about two years old. Then they become snowy white with black wing tips.

In the shallow nests, which were made of interlaced sticks, there are usually two or three eggs. These are greenish-white, spotted with brown, and about the size of the eggs of a large hen. A downy fledgling will often still be in the nest before a brother or sister has hatched. Schultz told me that ordinarily an ibis will lay but one clutch of eggs during a season; but if the first eggs are lost or disturbed, they will lay another clutch later in the season.

One thought struck me as I looked at the rookery—it looked as though it had been beaten down by a herd of elephants.

"That's a peculiar habit the ibis have," said Schultz. "They start flocking here every spring at the same time, and they sit around in the trees for a couple of weeks doing nothing. Then, as if on a signal,

they start beating their wings and flying through the trees. Before long the place is flattened and then they start building nests."

These water birds adhere to strict zoning laws. Each species—the white ibis, the blue heron, and the snowy egret—has its own colony among the island rookeries and keeps to its individual nests. The amazing thing is that the birds never seem to forget which of the identical looking nests are their own. "I've never seen a half-breed here yet," Schultz grinned.

The white ibis lives in Florida from Gainesville, south to the Keys, with large concentrations of them in the Everglades. The National Audubon Society's constant protection, and the public's growing awareness of their worth, is responsible for the increasing numbers of ibises. After the nesting season on the West Coast of Florida, many of the beautiful creatures find sanctuary on the Na-

Fred Schultz, warden for the National Audubon Society, pauses along the trail on Alafia Banks. Photograph by the author.



tional Audubon Society's Duck Rock among the Ten Thousand Islands in the Gulf of Mexico. The birds on the Alafia Banks appear about the first of March, and a few linger until the first of September.

I had noticed that there were no brown pelicans on the island, and I asked Schultz the reason.

"Oh, they want to be alone," he said. "They nest on Tarpon Key by the thousands."

Tarpon Key, I learned, is a small mangrove island. It is just west of the huge Sunshine Skyway Bridge, which crosses Tampa Bay over 14 miles of causeways and bridges from St. Petersburg to Palmetto. Schultz is worried, though, that a proposed plan to bridge over Tarpon Key and connect a chain of islands would result in the finish of the pelican rookery.

"It's too bad," he said, "that our spreading out is usually done at the expense of wildlife. We're bound to lose something by it." I knew what he meant as I looked up into the sky and saw the white ibises—milling about against the deep blue bowl of sky.

Back at the boat landing again, I asked Schultz's assistant, T. J. Thompson, how he liked his lonely life on the Alafia Banks.

"Suits me fine," he said. "I can't think of anything more worth while than guarding birdlife for a few months of the year."

The smoke from the phosphate plant still poured from the stacks as the boat carried us back to the mainland, but I thought the smoke seemed more friendly now. Some birds were flying right through it, and I wondered if this might be a good sign for the future of the clan.

Excerpts from some of Fred Schultz' Weekly Reports

Friday, February 5. "'Legs' the tame American egret is back after an absence of nearly two months. He came right to the back door for his fish dinner of mullet which I did not have. Fortunately the weather was good enough this a.m. to go fishing and I was lucky enough to catch a good amount. 'Legs' will eat for a week!"

Wednesday, February 17. "Every day brings a few more (white) ibis. Several small flocks went to Green Key this p.m. Just before dark, they all



A white ibis at the island rookery. Photograph by the author.

took off for Alafia Banks, about 300 in the flock, however, a close survey of the Banks earlier in the day netted me zero in . . . birds. About 1,000 diamond-backed terrapins were sunning on the beach at the Banks, otherwise nothing there."

Friday, February 18. ". . . went fishing for mullet for 'Legs'—no luck."

Tuesday, February 23. ". . . Green Key looked very fine this p.m. with the long lines of ibis coming in. It's the first time this season that lines have formed; usually they are scattered flocks this early."

Thursday, February 24. ". . . the (white) ibis are beginning to put on their before-nesting show here in the evenings. . . ."

Wednesday, March 16. ". . . The ibis are beginning to recognize their last year's homesites. They are beginning to settle down in the section they used last year."

Wednesday, March 24. ". . . Went to Alafia Banks. Altman (Schultz' assistant) and I cleared a spot for and stretched tent (killed diamond-backed rattlesnake). Went through rookery. It's easy to see 2,000 ibis there. Today, at noon, all seemed engaged in nest building. Nests everywhere, including a few on the ground. A very wonderful sight!"

Thursday, March 25. ". . . A constant stream of ibis pass by Whiskey Stump all during the day. Through the binoculars I see a never-ending line going down Alafia River to the Banks. Altman thought he knew where the home of the ibis was until he came to Alafia!"

Thursday, March 31. ". . . Ibis at work on their nest-building."

Thursday, April 8. "Went to Alafia Banks this a.m. Too attractive there to stay away. Saw one roseate spoonbill, two Hudsonian godwits on the Banks, also, saw two American oystercatchers on my way home from the Banks. . . ."

Tuesday, May 18. ". . . I went to the Banks (Alafia) and of all things an American flamingo was very much at home on the south bank of Bull Frog Creek about half a mile from Alafia Banks. We could get within 50 feet of it. At first I thought it was injured but on watching it fly about I saw that it was o.k. . . ."

Thursday, June 17. ". . . to Alafia Banks. Many flocks of young (white) ibis are . . . everywhere around the beaches now. . . . It won't be long before this island will be a deserted place. The heron colony is coming along fine. I see them (the young ones) venturing out of the nests onto the limbs of the mangroves."

Wednesday, August 24. "'Legs' the American egret sailed in this morning after an absence of two months. It's amusing to see him come to his feeding tray, just as if he expected his mullet to be waiting for him there. . . ."

Saturday, October 2. ". . . 'Legs' (the tame American egret) appeared . . . early this a.m. looking for . . . mullet. I was fortunate to get one for him yesterday. He was very eager to be fed."

December 21. "Several Ward's herons seem to have settled on Green Key for the winter. I have not looked for nests there, but no doubt they are nesting. I have found nests as early as the latter part of November."

—THE END

RED SQUIRRELS ARE

By Harrison F. Lewis

THE mother red squirrel had easy access to all but one of the birds' feeding-stations at our country home in Nova Scotia. Food was as readily available to her as to the chickadees, woodpeckers, or jays and she was made equally welcome at these places.

The only feeder, presumably not accessible to her, was a horizontal one that I had made from a short spruce stick. It was suspended, about five feet above the ground, from the lower strand of a two-wire pulley clothes-line. The spruce-stick feeder hung about 15 feet away from my back porch, and was intended to provide a reserve food supply that could be reached by birds alone. But our red squirrel had a growing family to feed and she wanted access to *all* the good food in her territory. She may have been spurred on by the fact that birds visited the clothes-line feeder before her eyes and she could not follow them. Time and again she ran nimbly up the wall of our house, clambered over the pulley and tried to walk along the wire toward the suspended feeder. It was useless! She would make uncertain progress for two or three feet, then begin to lose her balance. For a few seconds she would struggle, jerking her tail wildly to right herself. But always she became rapidly more unstable, until she had to admit defeat and drop to the ground! That clothes-line barrier between her and the feeder seemed insurmountable.

This was a squirrel, however, that would not give up. Her motto, it seemed, was that sound old one, "Try was never beat." Eventually it rewarded her, as it has rewarded many others. One day, to our astonishment, there she was, seated comfortably on the swinging feeder, while she calmly ate the food that had so long tantalized her! How did she get there? We watched, and soon discovered that she ran up the supporting pulley, grasped the *lower* strand of wire with all four feet and swung back-downward beneath it, where she couldn't lose her balance. Then she ran rapidly, hand over hand, or paw



Illustrations by Weston Emmart.



GOOD COMPANY

over paw, to a position a few inches above the feeder. From there she dropped down on the spruce-stick feeder. Easy enough, once she had worked out a method!

One of her children, grown as big as his mother, and confident in his newly acquired abilities, undertook it, too. He couldn't run up the wall of the house, but he overcame that difficulty by climbing some temporary staging to the roof above the porch. Once on the roof, he saw the clothes-line only a few inches below its outer edge, and was able to step gingerly down to it. Following his mother's example, he swung his body beneath it and moved toward the feeder, paw over paw. His advance was awkward and slow, but at last he hung above that attractive feeder. But he was hanging, back toward the ground, from the *upper* wire, with the lower wire of the trolley between him and the feeder. The feeder was suspended from that lower strand, which sagged downward because of the feeder's weight! To reach the feeder, he needed to drop at least three feet through the air, and, worst of all, that taut lower line was directly interposed between him and his goal!

The young hopeful worked back and forth along the upper line, seeking a good position for a drop. While creeping along the upper wire, with his back toward the ground, he could not look downward. And so he stopped from time to time to look below him. *Always that lower wire was in his way!* At last he jumped for the feeder, struck the lower strand of wire, and bounced to the ground. When he struck, he showed no pain or disappointment, but instantly busied himself in searching for food at the spot where he had landed, as though to give us to un-

derstand that *this* was his objective from the first!

In our part of southwestern Nova Scotia, though there is practically no hunting of red squirrels by men or dogs, our experience shows that the lives of these little creatures are short. One red squirrel at a time maintains a territorial claim to our house, adjacent feeding-stations, and a surrounding tract. It permits no squirrel intruders, except its mate, which shares its territory and food in winter. If the territory-holder is a female, her youngsters have similar privileges for a short period in spring. No individual squirrel, however, retains control of the area for much more than a year. Not long after one has disappeared, a new landholder, apparently a young animal, comes into the territory and takes over.

Though we have had one or more red squirrels in our yard under close observation much of the time, we have yet to see one of them cause any harm to birds or their eggs.

Squirrels and small birds, especially juncos, may feed only a foot or two apart. It seems that a tendency to attack birds and rob their nests is a trait exhibited only by certain individual squirrels.*

Red squirrels differ much in their ways and in what we may call their natures or personalities. Belligerency and peacefulness, friendliness and unconquerable suspicion, neatness and gross untidiness—all these characteristics we have observed as the squirrels and the years have passed by.

The most delightful of all the red squirrels we have known was a male that we called Buster. He charmed us for a year or so and we still like to think of him. He soon lost his natural suspicion of humans and would take food readily from our hands or from those of our guests who might be complete strangers to him. Most

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* See the interesting article "Kichi," by Louise de Kiriline (*Audubon Magazine*, September-October 1950 issue, p. 330). It is an excellent portrayal of some relationships between red squirrels and birds.—The Editor.





A drooping juniper (at left) on the South Rim Trail, Big Bend National Park, Texas. Photograph by Glenn Burgess.

The Tree That Came North

A Central American tree teaches us the lesson that plants—even trees—are not rooted in one area, but may shift their ranges.

By PHILIP FERRY

A TREE invader from outside our borders, the drooping juniper, has become an honored guest in the United States. Many plant immigrants become unwelcome competitors with our range grasses or farm crops, but this is not true of the drooping juniper (*Juniperus flaccida*), a native of southern Mexico and northern Guatemala. In the United States, it has made a home for itself in the Chisos Mountains of Big Bend National Park of

southwestern Texas, and is one of the most interesting emigrants ever to enter the country without benefit of a visa. The tree's northward migration from Central America to Texas is remarkable because it has defied many of the laws of plant migration by hurdling barriers, notably the Rio Grande, and several mountain ranges, not easily surmounted by plants. Plant movements from place to place are not unique, although the phenomenon never fails to excite and puzzle natural scientists. With the drooping

junipers of the Big Bend, we have an instance where a race has marched clear through one country, Mexico, and has taken root in a country beyond it.

It was thought for years that the drooping juniper grew only in Central America and in the Chisos. Botanical explorers have now established that the tree appears in a steady progression from Guatemala northward to Texas. It is perhaps appropriate that the little-known Colima warbler, a rare bird in the United States, spends the winter in parts of Big Bend National Park.* This is the northern limit of its range where it is allied with the

* See the article "The Colima Warbler of the Big Bend," by Alexander Sprunt, Jr., *Audubon Magazine*, March-April 1950 issue, pp 84-91, 116-117.—The Editor

drooping juniper, a familiar southern neighbor which is also at the northern extension of its range.

Like the weeping juniper of Arizona, the more familiar introduced weeping willow, and other "weeping" and "drooping" trees, the drooping juniper is so named because the twigs of its branches droop downward rather than extend horizontally. The word "weeping" is also applied to some trees which exude droplets of sap.

In gaining a foothold in the Chisos Mountains, the drooping juniper is occupying terrain which has a climatic environment similar to that of its native habitat. Chisos, by the way, appears to be an obsolete Spanish word meaning ghost or spirit. Local history has it that this was the last stronghold of the Apaches who were driven into the mountains by the advancing whites. The spirit of their last chief Alsate, still haunts this area, supposedly bringing ill fortune to all intruders.

In the Chisos, the drooping juniper has established itself in high, dry locations where it thrives at elevations up to 7,500 feet, growing best between 5,000 and 6,000 feet. While botanists have still to determine how the drooping juniper established itself in Big Bend, they are not surprised that it has done so. The southwestern portion of Texas, where the low, hot, barren, Mexican deserts meet the cool, forested Chisos, is an environment calculated to encourage a heterogeneous ecology. Mr. Garrison, Superintendent of Big Bend National Park, says of the area:

"We have several species here which are found in no other place in the United States. The flora and fauna is a curious mixture of Canadian and Lower Sonoran zones. Up in the Chisos, for example, we have Arizona cypress (which also extends over into northern Mexico), ponderosa pine, Douglas-fir, and quaking aspen. On the same mountain in the pinon-juniper belt we have our prize exhibit, the drooping juniper, which is a tree of Central America. Thus in a single habitat we have an overlapping of Mexican, Central American, and United States flora. Botanically this is one of the most interesting environments in the Western Hemisphere."

Big Bend National Park is generally high in elevation. At its lowest

levels, the elevation is 1,800 feet and the vegetation is that of the Lower Transition Zone. Along the Rio Grande, and near occasional mountain springs, plants grow that require more water. These include cane or large reeds very similar to bamboo in appearance, and the Palmer cottonwood, which, so far as we know, does not appear anywhere else. Another interesting species of this lower altitude is the tree-like shrub called desert willow. This shrub, really a catalpa, bears pink and white blossoms which have a surprising resemblance to tiny orchids. The Chisos Basin, center of the Park's social life, is at 5,400 feet elevation. A trip on horseback around the popular South Rim loop trail takes one up to 7,500 feet, only slightly lower than the Park's highest elevation, Mt. Emory, 7,800 feet. It is in this high forested tract that Big

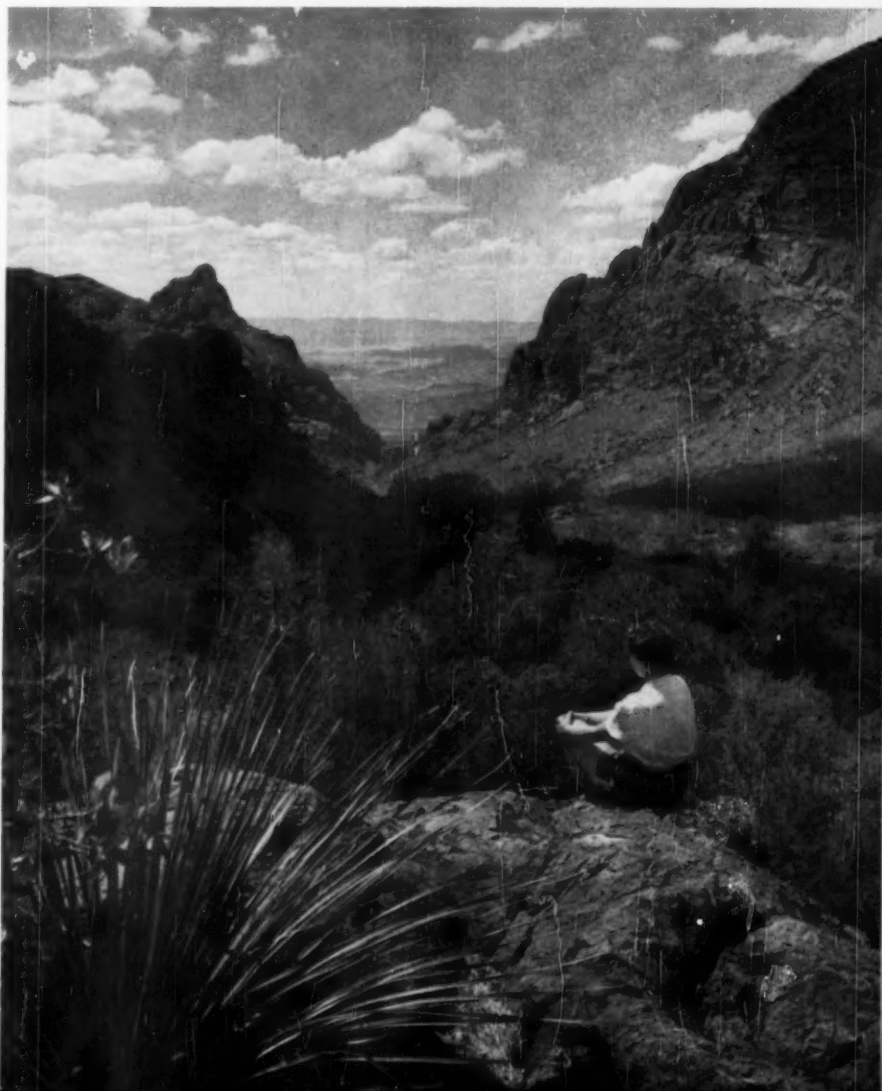
Bend's botanical hodgepodge is most apparent. "Our forest on the mountain is a museum forest," Superintendent Garrison says of it proudly. "There is not another one like it."

This high forest—high for Texas, which is for the most part plains country—is a fantastic mixture of diverse tree types such as are not generally found in one and the same habitat. I rode a horse through one forest at the 7,000-foot-level which contained ponderosa pine, Douglas-fir, oaks, Arizona cypress, one-seed, alligator junipers, and even Mexican madrone. To further confound the situation, nearby was a clump of aspens in close proximity to a small stand of Mexican junipers. These types do not intermingle but tend to remain in islands of more or less pure stands, all making up a sizable forest.

The southwestern United States

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"The Window"—a cleft in the western edge of the Chisos Mountains of Big Bend National Park. Photograph courtesy of National Park Concessions, Inc.





Cape May warbler in fall plumage.
Photograph by Hal H. Harrison.



Magnolia warbler.
Photograph By Allan D. Cruickshank.



Myrtle warbler.
Photograph By Allan D. Cruickshank.

Perhaps no group of birds is more interesting to more bird-watchers than the gaily-colored North American warblers. An authority tells us about

North American Wood Warblers in the West Indies

"North American Wood Warblers in the West Indies" is a chapter from the forthcoming book, "The Warblers of North America," to be published in the spring of 1957 by The Devin-Adair Company, New York City. Permission to publish this chapter in advance has been granted by the author of the chapter, Mr. Bond, and by the publisher. "The Warblers of North America" will be illustrated with 33 color plates from paintings of birds by John Henry Dick. The book will have at least a dozen contributors, including Frederick C. Lincoln, Alexander Skutch, Maurice Broun, Roger Peterson, Allan Cruickshank, Alexander Sprunt, Jr., and others.

THE EDITOR

By James Bond

THE West Indies* yearly receive a host of North American warblers. Nineteen species are regular winter residents; 10 species are transients; and six species are vagrants. For the most part, they frequent open, settled districts in the lowlands, and constitute an important and conspicuous element of the Antillean birdlife.

The term "winter resident," as applied to our North American warblers in the West Indies, is rather misleading, for many of them reach

the islands from their northern breeding grounds in summer—those of the Austral zone of southeastern North America as early as August or even July. This has given rise to the erroneous belief that some are native residents. June is the only month when all the species of migrant North American warblers may be said to be absent from the West Indies. Of the thousands of records, I know of only four in June and these were either immature or presumably, sickly birds. On the other hand, a few migrant shorebirds regularly pass the entire summer on the islands, foregoing their lengthy flights to their breeding grounds in the Arctic.

The virtual absence of North American warblers in June and July in the West Indies doubtless benefits the warblers native to these islands, freeing them from competition for food at a period when the majority of these have young. Such competition at other times of the year must be severe, except in the Lesser Antilles where migrant warblers are scarce. It presumably accounts for resident yellow warblers having become largely confined to mangrove swamps in the Bahamas and Greater Antilles.

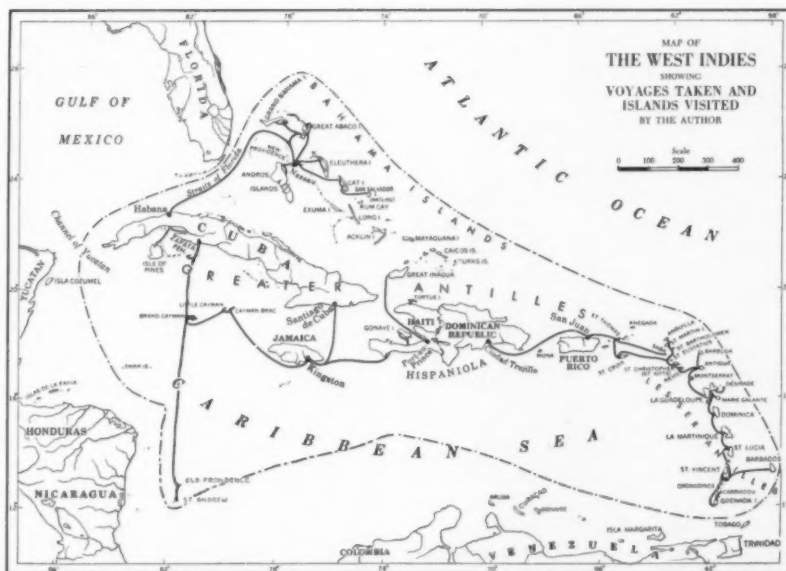
Among the earlier arrivals of North American warblers in summer are the yellow-throated warbler, prairie warbler, and Louisiana water-thrush, but it is not before September that the bulk of the migrants from North America reach the islands. The latest to appear there is the myrtle warbler of which there are no West Indian records

*The principal islands of the West Indies include Antigua, the Bahamas, Barbados, Cuba, Curacao, Dominica, Dominican Republic, Grenada, Guadeloupe and dependencies, Haiti, Isle of Pines, Jamaica, Martinique, Montserrat, Puerto Rico, St. Kitts, St. Lucia, Tobago, Trinidad, and the Virgin Islands.—The Editor

prior to October. From early autumn until early spring, northern warblers abound in lowland areas in the Bahamas and Greater Antilles, and in the mountains, in more open, cultivated sections. Many species live only in the low country during their stay, but none is confined to the mountains. Migrant warblers move about singly or in groups composed of several species. They often respond to "squeaking,"* particularly if by squeaking, one can induce one of them to "chip" in response. On such occasions I have had as many as six species in view at the same time.

Some of our North American warblers, in the West Indies, show little preference in habitat. Among these I would include the oven-bird and redstart, which occur from coastal areas all the way up into humid mountain forests. The Cape May warbler is also widespread during the winter, but apparently does not enter the rain forest, and is rare on any of the West Indies islands east of Hispaniola. One can find the myrtle warbler along the beaches, on the borders of mangrove swamps, and in open farming country in the hills. On the other hand, the northern water-thrush is almost entirely confined to the coastal mangroves, and the Louisiana water-thrush to fresh-water streams. The prairie warbler prefers the semi-arid scrub, and the palm warbler, the borders of fields, parks, and gardens. The palm warbler is frequently seen in Havana, Kingston, and Ciudad Trujillo. Yellow-throats live in thickets at all elevations, but are most abundant in marshy places. Rather few migrant warblers frequent the dense rain forest. Those most frequently observed in this environment are the black-and-white warbler, the parula, black-throated blue, oven-bird, and redstart, all of which are more numerous in the lower, drier woods. The most widespread and, as a whole, the most abundant of the winter resident warblers in the West Indies is the redstart, but on some islands other species exceed it in numbers. The prairie warbler is the most abundant in the Bahamas, the palm warbler in Cuba, and the

* Those familiar with the method of attracting birds by "squeaking"—sucking on the back of one's hands or fingers to make a thin, squeaking noise—will remember an article by Alexander Sprunt, Jr., "That Love of the Wild—the Squeak," published in the January-February 1953 issue of *Audubon Magazine*.—The Editor



Map of the West Indies by the author. The heavy black lines show the voyages he has taken and the islands he has visited.

parula warbler in Puerto Rico.

What is often astonishing to the northern ornithologist on his first visit to the West Indies is the abundance of the Cape May warbler, considered one of the rarer species of North America. In its summer home in North America, the Cape May inhabits the tall spruce forest of Canada and some of our northern border states. In the West Indies, it lives chiefly in gardens and plantations. It occurs, too, in mountains and in lowlands—in low cover and in tall trees. It is most abundant in Hispaniola but occurs virtually throughout the West Indies. The two rarest North American warblers, the Kirtland's and the Bachman's, have very restricted winter ranges. The Kirtland's occurs only in the Bahamas, the Bachman's in Cuba, including the Isle of Pines. Formerly both were observed fairly frequently, but in recent years, they have seldom been reported. Kirtland's warbler inhabits scrubby thickets, whereas Bachman's warbler should be looked for among flowering hibiscus trees, known in Cuba as "Majaguas." There the Bachman's warbler searches for food among the blossoms. Swainson's warbler, another of the rarer northern species, winters rather commonly in Jamaica, where it frequents both moist and relatively dry woodland undergrowth.

Three North American warblers—the worm-eating, magnolia, and black-throated green—winter reg-

Prairie warbler.

Photograph by Hugh M. Halliday.



Kirtland's warbler.

Photograph by Roger T. Peterson.



ularly but sparingly in the West Indies; the vast majority are in Central America during our northern winter. Several species, notably the Cape May, prairie, and palm warblers, seem deliberately to seek islands on which to pass the winter. These occur in some numbers on islands off the Caribbean coast of Central America, but are either absent or casual on the adjacent mainland.

By April, most of the North American warblers that are winter residents in the West Indies are conditioned for their long and hazardous migrations to their breeding grounds in northern woodlands. As the time approaches for their departure they often associate in little flocks and move restlessly about among the foliage. Occasionally one will sing, but the song is usually half-hearted, although readily recognizable. It is astonishing to hear a northern water-thrush singing in the depths of a tropical mangrove swamp! Apart from frequent chipping, northern warblers are usually silent at other times of the year in their winter ranges, although I have heard a black-and-white warbler in full song in Port-au-Prince in early January. By May, the majority have departed, but occasional individuals are about during that month. Of these, among redstarts, they are chiefly females and immature males.

The following list comprises warblers that are winter residents in the West Indies with inclusive known dates of their occurrence on these islands.

Black-and-white warbler	Aug. 1-May 25
Swainson's warbler	Sept. 25-April 14
Worm-eating warbler	Aug. 18-May 5
Bachman's warbler	Sept. 7-March 16
Parula warbler	Aug. 4-May 14
Magnolia warbler	Sept. 10-May 4
Cape May warbler	Sept. 15-May 17
Black-throated blue warbler	Sept. 11-May 11
Myrtle warbler	Oct. 1-April 28
Black-throated green warbler	Sept. 30-May 6
Yellow-throated warbler	July 11-April 29
Prairie warbler	Aug. 1-May 8

Kirtland's warbler	October-May 5
Palm warbler	Sept. 20-May 12
Oven-bird	August-May 18
Northern water-thrush	Aug. 20-May 20
Louisiana water-thrush	July 14-April 22
Yellow-throat	Sept. 7-May 11; two June records
Redstart	July 28-May 25; one June record

Much less is known about the West Indian transient warblers than of the winter residents. The transients are on the islands for very limited periods en route to or from their wintering grounds in Central or South America. Most of the information we have on these is recent, and has been acquired by naturalists living in the West Indies. Many transient North American warblers are not as rare among the islands as has been presumed, however, I have met only the yellow, the black-poll, and the bay-breasted warblers, although I have seen all of the winter resident species, with the exception of Bachman's warbler.

It appears that the principal migration route of the transients in the West Indies is by way of the Bahamas, Cuba, and Jamaica. Apart from the black-poll warbler, there are not more than 12 records of the regular transient warblers east of Cuba. There is no evidence to substantiate the theory that the eastern islands form "stepping stones" for these birds or other migrants moving to or from South America.

The black-poll warbler is the only one of the transient North American warblers that occurs throughout the West Indies, but its occurrence is sporadic in the Lesser Antilles, where I have never seen it in April or May. This warbler was reported in great numbers on Grenada in late November 1955, but apparently it was not present at St. Lucia during this period. Black-poll warblers are apt to dawdle during the autumnal migration, particularly as they approach their wintering grounds. On the other hand, they pass through the islands very rapidly in spring and are easily overlooked.

Other North American warblers that are transients, passing through the West Indies to winter in South America, are the cerulean, Blackburnian, bay-breasted, and Connecticut warblers.

There are no definite records of the cerulean and Blackburnian east of Cuba, and only two of the bay-breasted warbler east of that island. *The migration route taken by the Connecticut warbler is still to be determined.* Since there are no records of this species from Central America, it has been presumed that it migrates across the Caribbean Sea, but up to the present time there are only four records from the West Indies—three from the Bahamas, and one from Mona Island between Puerto Rico and Hispaniola.

The only other North American warblers that are habitual transients in the West Indies are the prothonotary, Tennessee, yellow, chestnut-sided, and hooded warblers, all of which winter for the most part in Central America. The prothonotary and hooded warblers have been noted with increasing frequency in recent years, the hooded warbler from as far east as Saba. North American yellow warblers migrate to some extent through western Cuba. A few may winter on the southernmost Lesser Antilles, since there is a late autumn record from St. Vincent ("early December") and another from Grenada (November 14). It is a common winter resident in Trinidad, presumably reaching that island from the west and by way of Central America.

Known dates of the regular transients in the West Indies are as follows:

Prothonotary warbler	Sept. 14-Oct. 7; Feb. 28-April 7
Tennessee warbler	Sept. 28-Nov. 10; March 31-May 5
Yellow warbler	Sept. 2-Sept. 10; April 21-May 8 (Cuban dates)
Cerulean warbler	Aug. 7-Sept. 15; April
Blackburnian warbler	Aug. 9-Nov. 2; April 11-May 21
Chestnut-sided warbler	Sept. 11-Oct. 31; April 20-May 11
Bay-breasted warbler	Sept. 28-Oct. 31; April 7-May 7
Black-poll warbler	Sept. 24-Dec. 9; April 1-May 24
Connecticut warbler	Oct. 6-Oct. 14; May 17
Hooded warbler	Aug. 27-Oct. 15; March 12-April 16

Finally, there are six species of North American warblers that are

so rare in the West Indies that they can hardly be considered more than vagrants, or wanderers, to this region. A record of any of them from any of the islands should be reported. These are the golden-winged, blue-winged, Kentucky, mourning, Wilson's, and Canada warblers, which habitually migrate to or through Central America. All are probably very rare transients and some winter sparingly. If one should see even one of these warblers on a large island, it would be an indication that others are present. This thought struck me forcibly when I collected a Lincoln's sparrow in dense rain forest in Jamaica, the first definite record of the species from the West Indies. It seemed to me inconceivable that this was the only one of its kind on the island!

It will be noted that almost all of the warblers that breed in eastern North America have been reported from the West Indies. Those that are still unknown from the West Indies are the Nashville warbler and the yellow-breasted chat. Both have been seen on the Florida Keys and they may occur in the West Indies as transients. In addition, the western orange-crowned warbler, which winters south to Key West, should be looked for in western Cuba during the winter. Most surprising is the apparent absence in the West Indies of the distinct eastern race of the palm warbler (the yellow palm warbler), in view of the abundance of the western race in Cuba. There have been sight identifications of the yellow palm warbler, but these are not acceptable since no authentic record based on a specimen has been obtained.

—THE END

ANNOUNCEMENT

We would like to announce the addition of two of Mr. E. W. Dutton's 16-mm. sound, color films to our library. Six prints of each of these films have been placed in our rental library through the generosity of Mrs. J. D. Cox and The Durand Trust. The films are titled "Screecher, the Tern," and "White Wings in the Willows." For further information please write to:

PHOTO AND FILM DEPARTMENT
National Audubon Society
1130 Fifth Avenue
New York 28, N. Y.

JANUARY-FEBRUARY, 1957

HOW IT

GOT

flamingo

ITS NAME

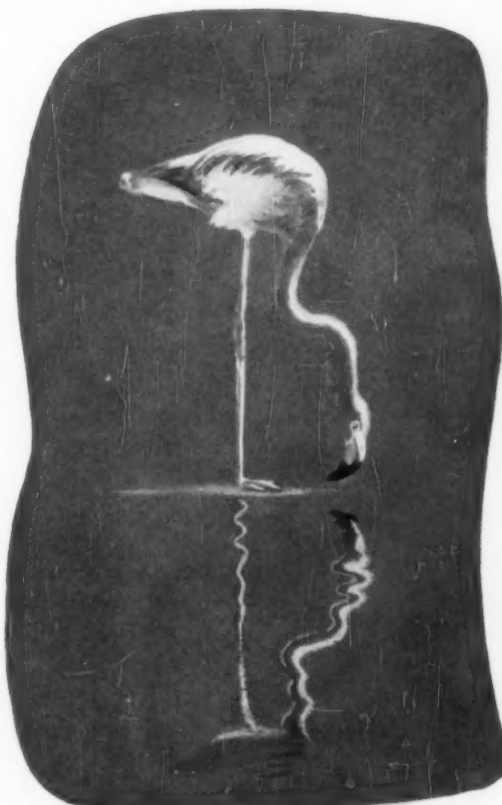


Illustration by Walter Ferguson.

By Webb B. Garrison

DURING the middle ages, Flanders was by far the most important principality of the Low Countries. Her artisans and merchants made the country a major financial and industrial center. Many families won great fortunes, on the strength of which they lived in high style.

Portuguese rivals used *Flamenco* to designate a native of Flanders. Probably as an international joke, that name became attached to a big bird. Its plumage was not especially striking when the long-legged fowl

was at rest. But when one took flight, it produced a unique effect. Scarlet coverts of its wings flashed in vivid contrast to black quills of the underwing. It looked almost as gay as a fat *Flamenco*, resplendent in his fine clothing.

Richard Hakluyt, pioneer English geographer, mastered four languages in order to read books on exploration. Among old manuscripts, he encountered the nickname for the big bird he had never seen. Partly through the influence of his books, *flamingo* became the standard name of the gayly-feathered wading bird.

—THE END

The Menace of Oil Pollution

Although there are many kinds of water pollution, oil upon our seas, bays, and rivers is one of the most dramatic kinds of all. Each year oil pollution may kill thousands of seabirds, and cause untold damage to bathing beaches throughout the world.

THE following excerpts* are from "Pollution Control in Relation to Wildlife," a panel discussion held on Monday, November 12, 1956 during the 52nd Annual Convention of the National Audubon Society in New York City. Mr. Carl D. Shoemaker, chairman of the panel, spoke about the pollution problem in general, then called on panel participants for discussion. Mr. Shoemaker, a conservation consultant of the National Wildlife Federation, is a member of the Water Pollution Control Advisory Board of the U.S. Public Health Service. Participants in the discussion were Mr. James Fisher, Vice-Chairman of the Royal Society for the Protection of Birds (in Great Britain); Ensign K. A. Bergman of the United States Coast Guard; and Mr. S. C. Martin, Regional Engineer, U. S. Public Health Service. —The Editor

• • •

Mr. Fisher: "Man is the filthiest animal that has ever trod the face of the earth. Man is ineradicably, utterly filthy. And every great nation in every part of the world has made a colossal mess as it has exploited its way through its own country. Afterwards, people like Carl Shoemaker, and other servants of progress, must spend all their lives mopping up. Your Society, as is mine in England, is dedicated to what is fundamentally a mopping up process—a nursemaid to the adolescent mess that we are making of this

world. There is no greater mess, I think, than the mess some people are making of the sea.

"Pollution of the sea from waste oil has caused the destruction of thousands of seabirds, which has been going on for approximately 35 or 40 years. It dates, of course, quite simply from the change from coal-burning to oil-burning ships, which can be pretty well assigned to the second decade of the century. And, of course, as you know, oil-burning and oil-carrying ships, that is tankers, have to discharge their waste oil somewhere. It is extremely tempting to dump it into the sea.

"During the early 1920's, various countries passed legislation prohibiting the discharge of waste oil in their territorial waters, and thus protected themselves as far as they were able. But, of course, oil will travel enormous distances. It has been proved to travel on the surface of the sea for hundreds of miles, and, I should remind you, the nations of Europe are connected along a very small seaboard compared with that of the U. S. A. There, only concerted international action could deal with the problem, which is why in 1926 a preliminary governmental conference on the subject was held. Interestingly, it was held, as many of you may remember, in Washington, D. C. As a consequence of it, a draft convention was drawn up, and the main feature was that each country should establish an area off its shores in which no oil should be discharged.

"Now in the first place, for administrative convenience, because you've got to have something that is practical, the distance was put at 50 miles, though certain countries were

allowed to extend that to 150. All this, unfortunately, was not ratified. I may say my Society did something about it, ratification or no ratification. All of our very important shipping companies voluntarily observe the 50 mile limit and have gone on doing so ever since. All of our great shipping companies, of which we have a few, voluntarily equipped their ships with separators, where they hadn't had them before. But, of course, oil pollution continued because there are ships around the east Atlantic sailing under other flags.

"Well, the matter was raised at the League of Nations in 1934 by the British delegate. It was referred to the Communications and Transit Organization, and the question was studied there. International questionnaires were sent out, and all sorts of questions were asked—in fact, a good deal of paper work took place, but World War II came and that was the end of that. Mind you, it wasn't quite the end, because people already had been prompted to do some of the researches and observations on such pressing problems as, how far oil would actually travel; and how far oil travel coincided with surface current travel. There has been a lot of exploration of surface currents, too, all of which has recently been intensified in the eastern Atlantic.

"During the Second World War, we in Britain bathed in oil for obvious and often tragic reasons, and we knew we *had* to bathe in oil, but we wondered when the war was ended if we would be able to get rid of the problem of oil pollution, once and for all. But you see a new fact had been introduced into the business, because in Britain and in

*The limitations of space in *Audubon Magazine* prevented our presentation of the entire panel discussion. We hope in a future issue to include the excellent discussion of the pollution problem in general, by Carl D. Shoemaker, and the views of the U. S. Public Health Service as presented by Mr. S. C. "Sandy" Martin.—The Editor

other parts of Europe, enormous numbers of oil refineries have been set up. Oil had been previously refined in the country of its origin. Between the war and in 1951, crude oil imported into Britain alone increased seven times.

"During the winter of 1951-52, which was a bad winter for oil, it was estimated that the number of birds observed oiled around the coast of the British Isles was somewhere around 100,000, and it is certain that after those 35 years, which is the period in which there has been oiling in Britain, the number of the auks, particularly the guillemots, (called murre in the U. S.), have seriously decreased, especially around those colonies in areas like the Firth of Clyde, and certain other parts of Scotland which are notoriously bad areas for oil pollution. There is more particularly a small colony of guillemots and puffins on Elsa Craig in the Firth of Clyde where at the end of the century there were certainly tens of thousands of bird species there. Now there are only a few hundreds of each kind, although lately, since there has been less oil in the Clyde, they have been regaining their numbers again. Well, you can't be absolutely sure that that decrease is directly correlated with oil, but the point is, there hasn't been a decrease in auks in other parts of Britain where they don't have oil pollution.

"In March 1952 there was a serious case of oil pollution on the coast of Greford in Sweden in the Baltic Sea that caused the deaths of 30,000 seabirds. There were other reports of the destruction of large numbers of birds, by waste oil, from Belgium, Denmark, and Holland at just about the same time. The North Sea is at times very bad. There is no doubt also that the number of birds that are seen dead as the result of oiling is but a fraction of the total numbers killed. This is especially so when there is oil in fairly open waters where these auks are feeding, and a greater number of them go to the bottom before they can be washed ashore. As you know, the oil gets into the interstices of the birds' feathers and destroys the heat insulation there. Very often, oiled birds die of exposure, or die of starvation because they can't feed quickly enough to keep up their body temperatures. Also, oiled birds

are impeded in seeking their prey.

"Well, the International Committee for Bird Preservation, the secretary of which is Miss Phyllis Barclay-Smith, has assisted me a lot in the facts that I am giving you this afternoon, and they are in the forefront of signing the resolution to this problem of oil pollution, and to put on international pressure. For years and years this resolution has been passed at international conferences, but nothing practical came of it. In March 1952, on the initiative of the British section of the International Bird Protective Committee, Mr. James Carrahar, a member

of the British Parliament, and various interested organizations and individuals, had a meeting at the House of Commons in London to discuss pressing for more active effort to solve the oil pollution problem. And all interests got into the act—resorts, fisheries, national protection societies. All became united on the problem and almost exactly the same thing happened among the Scandinavian countries in the same year.

"In 1953 an extremely useful report was published which really triggered an unofficial international conference of oil pollution of the

Continued on Page 34

OIL POLLUTION AS A KILLER OF BIRDS

During the winter of 1949-1950, a particularly bad year for the prevalence of floating oil, thousands of dead or dying seabirds were reported killed or incapacitated off the Atlantic Coast from Maine south to Florida. One observer on Long Island reported that he counted more than 400 oiled gannets, loons, grebes, Bonaparte's gulls, razor-billed auks, dovekies, and ducks on the beaches between Montauk Point and Coney Island. Another experienced Long Island observer said that the destruction of seabirds by oil in the winter of 1949-1950 was by far the greatest in his memory. Inland, the problem was particularly acute at Detroit, where thousands of ducks and other waterfowl were destroyed by oil sludge dumped into the River Rouge. A government employee stationed in Virginia reported that the waters of Hampton Roads, from Oil Point South to the mouth of the James River, were "periodically and frequently deluged with fuel and bilge oils from the fleet of naval ships that anchor abreast of the Naval Base. The worst offenders are the great aircraft carriers, though all oil-burning vessels are more or less guilty. In past years I have seen dead ducks by the hundreds washed up in the seaweed at high water mark."

Julian K. Potter, regional editor of *Audubon Field Notes*, reported that oil sludge is often dumped into the Delaware River in the Philadelphia area (and in Raritan Bay, New Jersey), with devastating effect upon waterfowl wintering on the river and bay. He likened the

yearly damage of floating oil to water birds as equal to the annual traffic-kill of land birds.

Periodically, seabirds are killed by oil on the oceanic and harbor waters of the Atlantic Coast of Canada. During the winter of 1949-1950, serious oil pollution there killed eider ducks, old squaws, scoters, scaups, golden-eyes, black ducks, murre, black guillemots, puffins, loons, gulls, and cormorants.

A reporter from the Pacific Coast said that damage to seabirds by oil had always been a problem there, but that tremendous numbers of birds killed had seldom been noted, possibly because of a lack of observers along the little-populated Pacific Coast of Washington and Oregon. Oil accidentally discharged in Seattle's waterfront had caused a heavy kill of water birds in January 1950. Species killed were common murre, pigeon guillemots, rhinoceros auklets, and marbled murrelets. The carcasses of fur seals, killed by oil, were washed up on the coasts of Washington and Oregon that winter.

For a historical background of oil pollution in the United States, and the experiences of other observers with oiled birds, we recommend to our readers the following references: "A Sea-bird Tragedy," *Bird-Lore*, March-April 1930; "Oil on the Sea," by Dillon Ripley, *Audubon Magazine*, March-April 1942; "Birds and Floating Oil," by Roger T. Peterson, *Audubon Magazine*, July-August 1942; and "Oil and the California Murre," by Frances Houldson, *Audubon Magazine*, March-April 1952.—The Editor



Musk oxen at the U. S. Biological Survey (now U. S. Fish and Wildlife Service) Experimental Station, College, Alaska. This is part of the herd brought there from Greenland. Photograph by Charles H. Rouse, U. S. Fish and Wildlife Service.

THE RETURN OF THE

PART II — (Continued from the November-December 1956 issue)

By Hartley H. T. Jackson

Capturing Musk Oxen in Greenland to Send to Alaska

The leader of the Norwegian expedition that captured these musk oxen in Greenland, reported on his observations and procedure, as follows:

"The animals nearly always appear in flocks but are only seldom met. The older ones range by themselves while the young ones keep together. They are generally guided by a leader. There is much violence in a flock of musk oxen. Once we saw a flock of 18 grazing in a plain. Two of the animals wandered away from each other to a distance of some 50 metres, then took a run and flew against each other. The loser left the battlefield. The animals pasture like cows. Sometimes they will set out at high speed for a distance of 100 to 1,000 metres when they stop short. When attacked they draw up into a flock with the leader at the head and then make a sally

unflinchingly. The animals are swift, and keen of scent, so extreme care must be taken in undertaking to capture them and such hunting is as much as one's life is worth. When the older animals have been disposed of the young are captured alive by use of a lasso made of particularly strong rope. The legs of the young animals are bound together and they are carried aside. The whole affair is a matter of seconds and you must be quick, for the remaining animals might attack you, and even the young ones are not to be trifled with. It is no easy thing to transfer the animals to the vessel. There is likely to be some trouble. The year-old calves are easily caught and managed. It is a great advantage that they have no horns. About two or three men are able to manage such a calf with their bare hands. By means of a muzzle or halter we contrived to get them on board the boat. Many are rather refractory but we leave them as much as possible to themselves

during the transporting. Then we get them into the whaling boat and upon reaching the ship's side we heave the whole boat on deck with the animals in it. We then put them in spacious and solid cases made of two-inch boards. At first the animals try their strength against the sides of the cases, but when after a while they understand that the cases are stronger than themselves they give in. After a day or two they begin to feed. It is no use to give them hay or grass grown in contaminated fields as the animals fall ill with such grass and hay, and die. They are very particular although hardy; for instance, they never taste water that is not entirely fresh. They soon get used to man. Having been in the crates on deck for about a week they easily understand that there will be a dainty tidbit when members of the crew approach with grass or moss. The young ones are the most easily naturalized. Therefore, we catch young animals by preference."

How the Musk Oxen Were Shipped to Alaska

Transported in crates to Bergen, Norway, the 34 musk oxen on September 6, 1930 were shipped from there on the Norwegian-American liner *Bergensfjord* to New York, where they landed September 17. The newcomers were received at the port by the late L. J. Palmer, then in charge of the U.S. Biological Survey experiment station at College, Alaska, E. A. Preble, and the late W. B. Bell, both at that time of the Washington office of the U.S. Biological Survey. In order to insure against the introduction of some of the many diseases of hoofed animals, such as foot-and-mouth disease, rinderpest, and surra, the animals were held in quarantine for 33 days at the Bureau of Animal Industry Quarantine Station, Clifton, New Jersey. Two 72-foot steel express cars then carried the animals to Seattle, where they were transferred to the steamship *Yukon* of the Alaska Steamship Line and reached Seward, Alaska seven days

later. Four ordinary freight cars with a temperature of 20 to 40 degrees carried them over the Alaska Railroad to College, Alaska, where they arrived the night of November 4, and the next day with the temperature at 16 degrees were unloaded and released in a 40-acre enclosure on the College of Alaska campus. During their American journey the animals were in roomy, individual crates, and were fed alfalfa hay and given an abundance of water. They all reached their destination in excellent condition. Most of the animals were not wild and were easily driven. One or two of the smallest ones even yielded to petting and handling. Food for their first Alaskan winter was varied for tests, but they were successfully fed on a number of feeds, including alfalfa hay, oat hay, brome hay, and native hay (sedge and redtop). Each animal ate about five pounds of food daily.

A Six-year Study of Captive Musk Oxen

And so began the unique six years study of confined musk oxen. Charles

H. Rouse and the late Lawrence J. Palmer, two outstanding authorities on range management and animal husbandry conducted the research. Each had had practical experience with range cattle, sheep, and horses; each, a thorough university education in range management; each, long, close contact with big game in the wild. Early in the spring of 1931 the animals were released in a 4,000-acre fenced enclosure of the 7,559-acre pasture included in the experiment station grounds. Soon it was noticed that the 4,000-acre pasture was too large and the herd was then confined to a pasture of 1,077 acres of which 600 acres were summer pasture, 325 acres spring pasture, 82 acres fall pasture, and 70 acres winter and hay meadow. Smaller pastures were fenced for isolating a few musk oxen for observation or study. Corrals were constructed and a loading chute built for easier handling of the animals.

Three years later, June 30, 1934, of the original 34 animals, 24 had survived—12 breeding-age cows and 12 bulls. Ten deaths in the herd had

VANISHING MUSK OXEN

A musk ox resembles a small, shaggy buffalo. Photograph by Frank Dufresne, U. S. Fish and Wildlife Service.



occurred—five animals were killed by black bears, one cow had a broken leg, one died from meningitis, one from actinomycosis, and two from some unknown sickness. Between April 29 and June 24, seven calves were born of which five lived. One had been still-born and another died from injuries received from a bull musk ox.

The spring of 1935 was a rewarding year, for each adult cow gave birth to a calf, though in one case of a still-born calf, the cow also died. The herd then comprised 12 adult bulls, 11 adult cows, and 15 immature, or young ones; a total of 38 musk oxen, the highest number reached at the experiment station. No calves were born in 1936, and through the deaths of seven animals and the transfer of four to Nunivak Island for adaptation studies, the herd was reduced in June to 27 animals. It is believed that the cows that gave birth to calves, both in 1934 and in 1935, did so because their previous year's calves were separated from the cows in the fall of 1934. The following year of 1936, the calves were not isolated from their mothers, therefore were not weaned, and the cows did not breed. In the wild, natural condition on its native range, the musk ox does not wean its calf until the second summer and so breeds every other year.

Can the Musk Ox Be Domesticated?

Hope for domestication of musk oxen was high in the early stages of the study at the Alaska Experiment Station. It was first believed musk oxen were less difficult to drive and corral than reindeer. As the animals aged they became untractable and hard to handle. They broke down strong fences. They were belligerent. Familiarity with humans had made the musk oxen fearless of their captors. Even though they were given excellent care and attention, they nevertheless were susceptible to diseases and infections, such as meningitis, actinomycosis, lip-and-leg ulceration, still-birth, and pneumonia. Black bears were destructive to them. Mosquitoes bit the eyes of the musk oxen. Some animals were so badly bitten by mosquitoes that they were temporarily blinded and in running through the brush seriously damaged their eyeballs.

Alaskan experiments were made

on the possible commercial use of the musk ox. Valuable wool constitutes about 60 to 80 per cent of the hair, the remaining 40 to 20 per cent is coarse guard hairs. The wool is one of the finest known, comparing favorably with that of cashmere or even vicuna. The difficulty would be to obtain pure wool in quantities. Clipping the animal may result in its death. Moreover, clipping produces a mixture of wool and guard hairs, and no process, mechanical or manual, is known by which the wool can be separated economically from this mixture. The musk ox sheds its wool beginning about the middle of May and up to the middle of June. It can, at that time, be combed from the oxen, which, again, endangers their lives either through shock or pneumonia. Wool can be collected from objects on which it has attached itself as the animal passed, but this would be too slow and tedious a way to get quantities of wool for commercial use. Nevertheless, close to 100 pounds were thus gotten at the Experiment Station, and much of it used in experimental textile work at the University of Alaska in making scarves, stockings, and mittens. The flesh of the musk ox is edible, but most people would prefer beef, mutton, or pork. Moreover, the quantity of better meat cuts from musk oxen is meager because of their heavy necks and foreparts, which produces

a relatively small meat salvage in butchering. The milk of the cow musk ox is as good as cow's milk according to some who had nothing but "tinned" cow's milk for comparison. But the cow musk ox produces no milk until it is five years old, and then the quantities are small.

Conclusions About the Commercial Use of Musk Oxen

The experiments conducted by the U. S. Fish and Wildlife Service near Fairbanks, Alaska, clearly indicated that it is entirely impracticable to raise musk oxen as a farming or commercial enterprise, and any attempt to do so should be regarded only as an expensive experiment almost certain of failure. The primary purpose of the studies in Alaska, which were to learn how best to adapt the introduced Greenland animals to Alaskan conditions with view to establishing the species there, bids fair to be successful. The four animals transferred to Nunivak Island Wildlife Refuge in 1935 had done well, however, the herd at the Alaska Experiment State had become such a problem that the 27 musk oxen remaining there were transferred to Nunivak Island and all were released on the refuge on July 17, 1936. These 31 animals were all that remained of the original 34 and their offspring. Nunivak Island was selected for this introduction after careful considerations of all factors—that there were no predators there, few disease hazards, and a favorable environment. The island is 70 miles long by 40 miles wide, and is in the Bering Sea, some 25 miles from the Alaskan mainland, directly west of the mouth of the Kuskokwim River. Here the musk ox herd has done well. In the autumn of 1951 an accurate count by airplane showed 76 musk oxen on the island, seven of which were calves. A stock of musk oxen when left alone in the wild in Greenland tends to double its number in about 11 years. The Nunivak herd has maintained this rate of increase.

I do not discredit the effort to raise musk oxen as experimental research. I cannot, however, condone the high-pressure sales propaganda that has developed about raising musk oxen, commercially. Says the advertising, "this will be the first new animal to be domesticated since

Range and Protection of the Musk Oxen

The musk ox, *Ovibos moschatus moschatus*, originally ranged from the west side of Hudson Bay northward to the arctic coast of North America and westward into Alaska; a subspecies, *Ovibos m. niphoeus*, ranged north from Chesterfield Inlet in Northwest Territories to the Arctic, and another subspecies, *Ovibos m. wardi*, lives along the coast of East Greenland northward around the north coast of Greenland, and southward along the west coast to about latitude 81 degrees N. In the Canadian Arctic, and on the mainland of Canada, musk oxen are legally protected. The law protecting them is enforced by the mounted police. Their protection has also been urged in Greenland.—THE EDITOR.

the Copper Age." This is pure bunk! Many animals, both birds and mammals, have been domesticated since the Copper Age—among mammals, the silver fox, mink, chinchilla, golden

hamster, Chinese hamster, and cotton rat. High pressure advertising has developed false hopes about raising musk oxen. Already it has influenced people to risk their money

in raising the musk ox as a commercial venture, an investment which is more "wildcat" than "musk ox." My advice is, "Do not gamble on musk ox farming."
—THE END.

RED SQUIRRELS ARE GOOD COMPANY—Continued from Page 17

of the squirrels that live about our home learn, eventually, to feed from our hands. Usually they remain suspicious and show frequent nervous fits and starts. They will stand as far away from us as possible and stretch their necks forward to the utmost when taking a tidbit. But not so with Buster. If he was near by when our back door was opened, he dashed up happily and unhesitatingly to be fed. If he found the door ajar, he would slip into the house, and would wander from room to room. Though we did not encourage him to come into the house, it was amusing to see him staring about at walls and furniture, as though saying to himself, "*My! what a place! I have always wondered what kind of nest these big creatures had!*" When permitted to run about the house freely, he would run up and down the window drapes and investigate nooks and corners.

Some squirrels, during all the time that they spend with us, do not enter the cellar; others visit it regularly and spend much time there. The route they take is presumably through some underground tunnel and we have yet to discover it. They munch a few apples and tear up newspaper on the shelves, but they do no serious harm.

In January of 1954, the greater part of a squirrel courtship was apparently carried on in our cellar. When outside the house, the two squirrels might sit demurely side by side, but day after day we could hear through the floor under our feet, a deal of wild scurrying and chasing in the cellar. At times we could hear one of the animals utter a soft, quickly wavering, continuous chatter, resembling somewhat the gurgling sound made by water flowing from an inverted bottle.

North of our house, the sheltering woods are only 20 yards away. When the ground is bare of snow, a red squirrel will readily cross the gap. But if 10 inches of snow covered the ground, the squirrel tunneled its way toward our yard. The tunnel extended from the border of the woods toward a feeding-station beside the

house, but it ended midway between. Along its course, at intervals of about six feet, there were openings to the surface—"squirrelholes," corresponding to the "manholes" in a conduit.

With due regard for its own safety, the squirrel would enter the woodland end of the tunnel, but apparently its nervous curiosity made it reluctant to remain under for long without surveying its surroundings. At each "squirrelhole," it would pop up, head and shoulders above the snow, and take a good look round. Sometimes, after it had dropped back out of sight, it would reappear at the nearest opening toward its starting-point, rather than at the next one toward its destination! When, after this backward and forward tracking, it reached the end of the tunnel, it would cover the rest of the distance to the house by a quick dash across the surface of the snow. Apparently it preferred the risk of a short distance above the snow to the labor of tunneling under it.

In the spring of 1955, the female squirrel, which then shared our home area, provided us with some new experiences. She found an opening under a bottom clapboard of our house, giving her access to the interior of the outer wall. Eventually, by this route, she reached the attic, and in the wall, beside our dining-room, she made her nest and brought forth her young. We did not realize what was going on until the young, still in the nest, began to squeak loudly enough for us to hear them. While we were not exactly pleased at this development, we could not, at that stage, stop up the entrance. As a matter of fact, this unplanned sharing of our house with a squirrel family caused us neither harm nor damage of any kind. When the youngsters were half grown, they left the nest, and, spurred on by their natural curiosity, explored every cranny of their sheltered surroundings, as young squirrels should. In due course their wanderings took them to our attic, where they scampered about, but harmed nothing. It was more than a little

fun to go up there and glimpse several slender, half-furred squirrel tails disappearing down into the open walls of the unfinished sides of the attic. Then, in a minute or two, if one remained quiet, eager, bright-eyed little squirrel faces appeared above the floor, looking about to reconnoiter the situation!

The young left the house as soon as they were well grown. Their mother, for a time, led them to the feeding-shelf on the back porch. Once we were assured that the whole family was outside of the house, we blocked the opening under the clapboard. A future squirrel tenant inside our house might not be so well behaved!

Great was our surprise when, on a September day, the red squirrel that is now occupying our home area, limped to our back door with five or six porcupine quills protruding from its body. Two were in a foreleg; the others were in its hips and sides. The animal held the injured leg off the ground and hobbled clumsily about. Where the quills protruded from its body and leg, the flesh was badly swollen and the poor little creature appeared to be in great misery. We supposed that it could not live long. On the following day, when it did not reappear, we assumed that it had perished.

But another surprise was in store for us. Four days after we had first seen the injured squirrel, it reappeared at our feeding-station! Only three quills protruded from its body. Although it was still very lame, it seemed to be suffering less. Five days later only two quills were visible, and on the following day, or 10 days after we first saw the injured squirrel, it was completely free of quills and seemed to be in normal health and good spirits. The points of penetration of the quills were visible as scars for some time thereafter, but eventually they became indistinguishable.

More than a year later, when the porcupine-injured squirrel had been succeeded by another, we observed a somewhat similar experience. This time, the squirrel frequenting our feeding-stations appeared one day

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Two days later, on June 7, there were two young owls side by side in the same oak. One of them, I thought, looked slightly more unsteady than the other. One of the parents brought a large piece of some kind of animal intestine and fed it to them by tearing off small pieces and doling it out to them, each in turn. The next day their menu consisted of fish, a medium sized one, administered to them by the parent owl in the same way. Fish, frogs, crawfish, and lizards, besides mice and other small mammals, comprise a good deal of the barred owl's diet. There must be quite an advantage to the adults in having the nest near a lake. Several times we saw a parent owl fly down to the shallow water at the shore to pick up something. Incidentally, we never saw one of our owls chase a bird though, of course, they do occasionally eat small songbirds and small owls.

It is vocally that the barred owl really runs riot in its expression. The "hoo-hoo-hoo-hoo, hoo-hoo-hoo-hoo-a-a-ah" is the standard call but in each of our parent owls, the pitch seems to be different. Which is the higher-pitched, the male or the female, we do not know. Some authorities say that the male is the bass and the female the treble. While we imitated them one night, one flew right in front of us and landed on a post very close by. In checking on the call of this particular owl, we found that its treble call had a pitch of about the G above middle C during the main part of the call. The bass call was considerably lower.

Before this, while the youngsters were still exercising their wings and walking gingerly about on the branches of the bur oak, we heard and eventually identified three calls that were different and new to us. One was a plaintive "*ah-eee*," with a rising inflection. To our surprise we discovered that it came from the old owls, for what purpose I don't know, except that it seemed to be connected with their parental responsibilities. Another call was obviously a warning from the parents to the young. Whenever I walked near to a tree where one of the youngsters was sitting, I heard a

The northern barred owl, *Strix varia varia*, the subject of this article, nests from Canada and Newfoundland south to Arkansas, Tennessee, Kentucky, northern Georgia, and parts of South Carolina; westward to eastern Wyoming, central Montana, and eastern Colorado. The southern form, the Florida barred owl, *Strix varia georgica*, lives in the southeastern United States from eastern Texas and Arkansas to northern Alabama and southward. It is especially common in Florida. Another subspecies, the Texas barred owl, *Strix varia helveola*, is a much paler form that lives in south-central Texas, from the eastern border of the Edward's plateau (Bexar County) to the coast.

short but soft "whoow-whoow," which had a muted quality unlike the eight-hoot call which is rather strident at close range. The third call came from the young owls. It was a prolonged hiss or wheeze, perhaps, ending in a sharp squeak, "s-s-s-s-s-s-s-ik," a rising inflection at the end. We felt sure this was a hunger signal for it increased in intensity whenever the parents came near. An owl's sense of hearing is very acute and it certainly needs to be to detect this wheeze at any distance from the young owls. Another call, e-e-e-e-e-e-ek," sounds like an outgrowth of the squeaking, hunger-call. One must add to all these notes the weird scream which the barred owl sometimes gives. This is not quite so terrifying, however, as the maniacal shriek of the great horned owl which makes one's hair stand on end; nonetheless the barred owl's shriek is an eerie cry.

Regardless of its weird assortment of calls and cries—its colorful vocabulary—we can recommend a pair of barred owls as top-notch, around-the-clock entertainment. —THE END

Continued from Page 19

has been in the grip of a 10-year drought. As a result many tree species have succumbed to the shortage of rain. During my last visit to Big Bend in 1954 this high-level forest showed the effects of a decade of unrelieved drought. Native trees had withered away and died, unable to continue the struggle for life. The standing tree-corpses included species from oaks to typical desert plants. Of the junipers, only the drooping juniper seemed to withstand the continued aridity, although even individual trees of this species have succumbed. Since the drooping juniper appears at all times to be wilted, it is not unusual for worried visitors to report to park rangers that whole stands of the trees are dying. However, plant pioneers like the drooping juniper are notoriously durable. They have the vitality to withstand all manner of hardships and deprivations, and to spring back with the first revivifying rain. These are qualities which make it possible for the drooping juniper to stray far from its native land, and to cling tenaciously to life, once it has taken hold.

—THE END

LUDLOW GRISCOM RECEIVES AUDUBON MEDAL

DURING the 52nd Annual Convention of the National Audubon Society, held in New York City, November 10-13, 1956, the Audubon Medal was awarded to Ludlow Griscom, recently retired Chairman of the Board of Directors of the National Audubon Society.

The presentation was made by Dr. Paul B. Sears, newly-elected Chairman of the Board, at the Annual Dinner of the Society. In making the presentation, Dr. Sears read the following citation to:

LUDLOW GRISCOM

ornithologist, botanist, explorer, author, and conservationist, for 15 years a director of the National Audubon Society, for 12 years as Chairman of its Board, who has, through the persuasive influence of his understanding, sympathetic and good humored personality, and through application of his profound knowledge, greatly advanced the cause of conservation and increased public awareness of the fundamental relation to human happiness and progress of intelligent treatment and wise use of the renewable natural resources.

In Ludlow Griscom's absence, owing to illness, his son, Andrew Griscom, gave the response:

"Ladies and Gentlemen of the National Audubon Society:

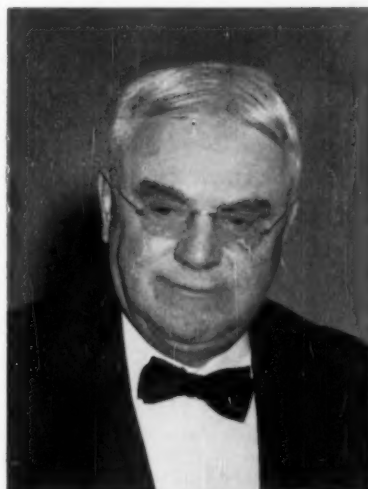
"It is with a feeling of great pleasure and profound humility that I gladly accepted the Conservation Medal of the National Audubon Society. This plea of humility is greatly enhanced by the fact that my service as Chairman of the Board for the last 12 years has been one of the most pleasurable contacts of my life, both with the Directors and many of the Staff, whom I regard as my warm, personal friends.

"In retiring from the Board, after possibly too many years, I exercise the right to make a few brief remarks.

"It was not too long ago in my memory, the Audubon Society having obtained all its original objectives in the way of the protection of birds, that its existence was regarded as no longer necessary and suggestions were rife that it should disband. I was among those, who thought this would be a tragic and fatal error, as it was

clear that the Age of Protection was turning into a bigger Age of Conservation.

"In the year 1956 this problem is signally well proved. In spite of our great system of national parks and wildlife refuges, they are always under attack. There is the inevitable temptation to try to use them for some sort of economic reward. Eternal vigilance is always necessary to defeat these attempts. To succeed in defeating them, education is of vital importance and with a fair sized endowment this is precisely the service



Mr. Griscom at the 1952 annual convention. Photograph by Acme.

the National Audubon Society is well fitted to perform. Let the magazine and our published literature steadily run a flow of sound conservation messages. The government officials in authority are hard pressed and are calling loudly for help. Let us try and give it to them to the best of our ability.

"I have the privilege of sending you my greetings through my son. He will extend my grateful thanks for the medal and my best wishes for the continued prosperity of the National Audubon Society."

LUDLOW GRISCOM

THE AUDUBON MEDAL

In May, 1946, at a meeting of the Board of Directors of the National Audubon Society, it was proposed that the National Audubon Society originate a medal for distinguished, individual service to conservation. The medal was to be awarded, from time to time, to persons whom the Board feels have accomplished outstanding work in conservation.

At a meeting in September, 1946, the Board agreed upon these principles, and subsequently engaged the noted sculptor, Paulanship, to design the medal.

The bronze medal has now been awarded to six men; in 1947 to Dr. Hugh H. Bennett, at that time Chief of the Soil Conservation Service; in 1949 to Dr. Ira N. Gabrielson, President of the Wildlife Management Institute, formerly Director, U.S. Fish and Wildlife Service; in 1950 to Mr. John D. Rockefeller, Jr., for his great contributions to our system of national parks; in 1952, to Mr. Louis Bromfield; in 1955, to Mr. Walt Disney, and in 1956, to Mr. Ludlow Griscom.—The Editor.

BIRD FINDING WITH *Sewall Pettingill*

WHERE TO GO
WHEN TO GO
WHAT TO SEE



MANY times, while preparing my guides* to bird finding, I berated myself for having undertaken the idea. I was annoying some 600 people with requests for data and struggling to organize a mass of facts into 46 chapters; I was spending seven years at a job that I thought would take only three. The market was already flooded with bird books, and mine would add two more. Certainly, I thought, I could be devoting time and energy to a more worth-while project!

But not long after the publication of the guides I began to feel heartened—the reviews were complimentary. In the months that followed, all of my doubts about the value of the whole effort vanished—the books were taken by people on many hundreds of trips and found useful. Last summer, three years after the appearance of the second book, a married couple in California wrote me, saying: "We have now used your two guides to bird finding the full length of both coasts and in virtually every state in between and have gone to scores, if not hundreds, of the places you recommend. I am sure your books have made our various trips more productive, ornithologically, than they would have been otherwise, and we would no more think of leaving them behind us than we would go away without our binoculars; they have become indispensable."

Encouraged by this response, I am happy to take up the bird-finding project anew by writing a column for *Audubon Magazine*. My plan is to give sugges-

tions that will further increase the productivity and enjoyment of trips for birds. Most of the suggestions will not have appeared in the pages of the guides. Now and then, however, I shall supplement certain accounts in the guides with additional material and correct certain passages which have become misleading or otherwise inadequate, owing to changes in environments, bird populations, routes, and so on.

I shall very much welcome hearing from you, the readers of this column, about new, bird-finding possibilities. If you are familiar with an area that should yield something of outstanding interest, ornithological or otherwise, let me have the information so that it may be shared, through this column, with others.

PAINTED BUNTINGS IN FLORIDA

If you happen to be visiting Florida this winter and want to see painted buntings, then you should go to Fort Pierce, on the east coast.

For many years Miss Clara Bates, of Fort Pierce, attracted painted buntings to her dooryard feeding station at Indian River Drive and was always pleased when bird finders from near and far came to see her handsome birds. As Miss Bates has recently moved from her home and given up the operation of the feeding station, the directions given in my, "A Guide to Bird Finding East of the Mississippi," are no longer applicable. However, I am glad to tell you that it is still possible to see painted buntings in Fort Pierce. Through Miss Bates' influence and encouragement, Mr. and Mrs. Sam Hardwick at South Indian River Drive (Route 1, Mail Box

1128) have established a backyard bird sanctuary which brings buntings to them every winter. This year of 1956, eight had already arrived by October 21.

To reach the Hardwicks, go to the Community Center in Fort Pierce and proceed 8.5 miles southward on South Indian River Drive. You will be welcome at any time. If the Hardwicks do not happen to be at home, just walk to the back of their house and look for the birds. The buntings, which are quite fearless, may easily be seen.

CAVE SWALLOWS IN TEXAS

Cave swallows, *Petrochelidon fulva*, are common residents of Coahuila, Tamaulipas, and Yucatan in Mexico, although they are known to nest in the United States in a few places as far north as south-central Texas. Cave swallows are closely allied to our cliff swallows, *P. pyrrhena*, from which they can be distinguished by their smaller size, dark brown foreheads, and paler throats. They are sometimes called Coahuila cliff swallows.

Thanks to Dudley and Vivian Ross, I have learned of an excellent if not unusual place to see a nesting colony of cave swallows. This is the Devil's Sinkhole at Rocksprings, Texas, 78 miles northeast of Del Rio, 47 miles southwest of Junction, and 180 miles west of Austin. To reach this geological oddity from Rocksprings, you drive northeast on US Route 377 and State Route 41 to a point 7.5 miles out of town where the highway forks; take Route 41 to the right and follow it 1.3 miles to a "bumpgate" on the right near which there is a faded sign reading "Devil's Sinkhole";

*"A Guide to Bird Finding East of the Mississippi," and "A Guide to Bird Finding West of the Mississippi," Oxford University Press, New York, N. Y.

go through the bump gate (a contraption you bump with your car to open, then hustle through before it closes and bumps you) and later through two other bump gates (you'll be experienced after the third time!) for a distance of 2.4 miles to the end of the road. Your destination—an impressively deep opening in the ground, carefully fenced—will be a few steps ahead.

The time to visit the Sinkhole is the spring, after mid-April, when several hundred pairs of cave swallows have again reclaimed this bizarre spot as their common nesting site. About 30 to 35 feet in diameter, the hole runs straight down 75 feet or so through limestone. A few feet from the bottom it broadens out into a series of galleries and passageways. Here, out of view from the rim of the hole, the swallows nest. Unless you are willing, and have the equipment, to lower yourself into the pit, you will have to forego observing the nests and be content with watching the birds swarming in and out of the main entranceway.*

SOME SUGGESTIONS FOR BIRD FINDING IN ARIZONA

Again, thanks to the Rosses who have spent considerable time bird finding in the Southwest, I have some suggestions for your next trip to Arizona.

See the rufous-winged sparrows. This species is *Aimophila carpalis*, a sparrow closely related to the rufous-crowned sparrow, *Aimophila ruficeps* of California. The rufous-winged sparrow, essentially a Mexican bird, nests in the United States only in southern Arizona. The best place to see these birds is 16 to 18 miles southeast of Tucson on US Route 80. Their habitat, on either side of the highway here, is level terrain with high clumps of tobosa grass, much creosote bush, and scattered mesquite. Though permanently resident, the birds are most easily found in the spring when the males are singing. In late May, the Rosses had no difficulty seeing four birds and hearing at least eight. It is actually possible, they say, to make observations without crossing the fence paralleling the highway.

Try Topoc Swamp for Harris's hawks, *Parabuteo unicinctus*. This rewarding area in extreme western Arizona is part of the Havasu Lake National Wildlife Refuge. One section of the swamp can be readily visited by car as follows: Take

the Oatman Road north from Topock for five miles, then turn off left (west) on a graded road which, in two to three miles, passes along the edge of the swamp where there are cattails, brush, and dead trees. If you wait here a few minutes any time of the year, you will be almost certain to see one or more Harris's hawks, either perched or in flight. (Besides southern Arizona, the only parts of the United States where Harris's hawks can be regularly observed are southeastern California, southern New Mexico, and southern Texas.) The Rosses, during one-and-a-half hours of searching in this locality in early June, saw many other birds, including the white-winged dove, Gila woodpecker, ash-throated flycatcher, blue-gray gnatcatcher, Bell's vireo, and blue grosbeak.

Explore Rustler Park and Cave Creek Canyon in the Chiricahua Mountains. These are two delightful spots high in the Chiricahuas near the Mexican border in southeastern Arizona. Indeed, they are well worth investigating along with the Chiricahua National Monument (see "A Guide to Bird Finding West of the Mississippi.")

Not a park in the usual sense, Rustler Park is actually a mountain meadow (elevation about 8,300 feet above sea level), surrounded by a dense stand of pines. There is a campsite near by. You can reach the park by driving west on State Route 181 from the entrance to Chiricahua National Monument. A few hundred yards after passing the Faraway Ranch, (which has good accommodations and is half a mile from the Monument entrance), you will see a well-marked, graded road with a sign

saying that Rustler Park is 16 miles from that point. Along the road ("a very winding" one, according to the Rosses) to its end at the park, you should stop now and then to look for birds on the vegetated mountain slopes. Some of the species you may expect to see in the spring are the buff-breasted flycatcher, olive warbler, and red-faced warbler. Others you are likely to see include the Arizona woodpecker, Coues's flycatcher, Arizona jay, Mexican chickadee, Virginia's warbler, Grace's warbler, hepatic tanager, and Mexican junco. At Rustler Park, after dark, the Rosses heard flammulated owls and (Stephens's) whip-poor-wills, and saw a pygmy owl.

Cave Creek Canyon is en route to the town of Portal, Arizona, on the east side of the Chiricahuas. To get there, you take a gravel road to the left (east) off the road to Rustler Park at a point about 13 or 14 miles from Route 181. Deep and wide, with many large trees, a small stream, and striking rock formations, the canyon offers a picturesque environment for bird finding. It is one of the more likely spots in the United States to see the sulphur-bellied flycatcher. In his "Arizona and Its Bird Life" (published by the Bird Research Foundation, Cleveland, Ohio, in 1951), Herbert Brandt lists, on pages 467-476, 89 species of birds which he saw in the canyon.

BIRD FINDING IN THE NATIONAL WILDLIFE REFUGES

Some of the finest places for bird finding are our national wildlife refuges where you are always welcome after making known at their respective headquarters the purposes of your visit. As an aid in making your stay productive, bird lists for most of the refuges have been carefully prepared and are available for the asking. Thus, if you want a bird list for a particular refuge that you plan to visit, write or call the headquarters office, using the address in "A Guide to Bird Finding." If you want lists for several refuges that happen to be in the same part of the country, you can get them by writing to the regional office of the U.S. Fish and Wildlife Service that administers the refuges. The addresses of the regional offices are as follows: *Western Regional Office*: 1001 N.E. Lloyd Boulevard, P.O. Box 3737, Portland 8, Oregon; *Southwestern*: 906 Park Avenue, S.W., P.O. Box 1306, Albuquerque, New Mexico; *Midwestern*: 1006 West Lake Street, Minneapolis 8, Minnesota; *Southeastern*: 620 Peachtree-Seventh Building, Atlanta 23, Georgia; *Northeastern*: 1105 Blake Building, 59 Temple Place, Boston 11, Massachusetts. The various lists are revised regularly. It is hoped that the entire set of 80 lists will eventually be issued as a bound volume.

—THE END

EDITOR'S NOTE

Dr. Olin Sewall Pettingill, Jr., whose new column appears in this issue (see announcement in our November-December 1956 issue) is the author of the two-volume work, "A Guide to Bird Finding East of the Mississippi," and "A Guide to Bird Finding West of the Mississippi," published by Oxford University Press, New York City.

A nationally-known teacher of ornithology, a lecturer and scientist, Dr. Pettingill is also well-known for his "A Laboratory and Field Manual of Ornithology," published by the Burgess Publishing Company, 426 South Sixth Street, Minneapolis 15, Minnesota.

* In the November-December 1956 issue of *The Condor*, p. 452, Kincaid and Prasil reported a colony of cave swallows nesting in Goat Cave (about eight miles southwest of the entrance to Carlsbad Caverns), Eddy County, New Mexico, a colony that they discovered in June 1952. On June 26, 1956, there were about 15 pairs of these swallows in Goat Cave.—The Editor

THE MENACE OF OIL POLLUTION

Continued from Page 25

sea, organized in London in October 1953 by the British independent committee. The conference was attended by representatives of 28 countries. It is an interesting example of international enterprise, by societies in which nobody waited for UN or UNESCO or anybody else to come along and do something. They did it themselves. As a consequence, an inter-governmental conference was held in London in April-May 1954, in which 42 nations were represented. They were equivalent to the owners of 95 per cent of the world's shipping tonnage. And naturally the delegations all agreed this problem was a serious one and that a practical solution must be found to rid the beaches and seas of oil. As the problem in various countries is, and always will be, very different, opinions, of course, were equally varied. Some delegations merely wished to make recommendations; others desired total prohibition of the discharge of oil or of oil-contaminated waters. However, the convention agreed, on May 12, 1954, on the main provision which was the prohibition of the deliberate discharge of oil, including the accidental discharge of oil and oily mixture.

"The point is that at the conclusion of the conference, certain countries signed the convention, whose prohibitions were really comparatively severe, making considerable demands on every government. Representatives of a large number of countries signed the convention on behalf of their respective governments, subject, of course, to final ratification at home. Of these, the signatories were Belgium, Canada, Denmark, Finland, the German Federal Republic, Greece, Yugoslavia, Italy, Bulgaria, Norway, Sweden, and the United Kingdom. Since then, the following countries have also signed; Ceylon, France, Republic of Ireland, Japan, Mexico, the Netherlands, New Zealand, and the Soviet Union.

"Now as far as my information goes at present, the following countries have ratified—the United Kingdom, Norway, Sweden, Bulgaria, Italy, Mexico, the German Federal Republic, and Denmark. Until 15 countries have ratified, the convention won't come into action. There

does seem to be quite some hope that this may take place within the next 12 months. If that happens, I do think there will be a forward stride in dealing with this one particular kind of pollution.

•
Mr. Shoemaker: "Thank you, Mr. Fisher, for that very fine discussion on the pollution situation. Now that we get home again, it is appropriate that Ensign K. A. Bergman will discuss the pollution problem from the point of view of the U.S. Coast Guard. I know he is going to tell you some very interesting stories.

•
Ensign Bergman: "As most of you probably know, the United States Coast Guard, in time of peace, is actually a federal police force for our waterways. Now the primary question that comes up, first of all, is what waterways are involved. The Coast Guard has jurisdiction over navigable waters. Navigable waters are normally defined as those waters in which there is, in fact, navigation, and in which interstate commerce goes on. Regarding oil pollution, our duties are restricted to those waters in which, in addition, the tide ebbs and flows. Thus, for example, the Hudson River is "navigable water" until approximately Poughkeepsie, New York, because the tide ebbs and flows approximately to that point. The Coast Guard has enforcement powers under the Oil Pollution Act of 1924, actually, in only a secondary way. The primary enforcement agency for that Act is the U.S. Corps of Army Engineers. Because of the Coast Guard's small boats and later-day helicopters stationed around the country, for the purpose of maintaining aids to navigation, harbor patrols, etc., the Coast Guard has been designated to assist the Army Engineers in discovering and enforcing the oil pollution statute. Before we go into the statute itself, let's go into how oil pollution actually comes about in a majority of cases.

"Mainly, I should think, and in this the other members of the panel may think that I am optimistic, I believe they are due to accidents. Some of these are *preventable* accidents, and there's no question about that. But the accidents can happen

in various ways. Take, for example, the *Andrea Doria*. It sinks, openings are made in her hull and in her tanks, and the oil comes gushing forth. At this point there is nothing that can be done to stop it, and presumably the accident was unavoidable in the first place. There is another type of accident that can occur—namely oil pipelines can be in such condition that the slightest bit of over-pressure will burst them. Couplings and brackets can come loose. There is, of course, also the deliberate pumping of oil into waters, which can and *must* be avoided. The best way to prevent it is usually by statute and by rigid enforcement of the statute. For some reason, although everybody is highly interested in preventing oil pollution, when a rash of pollution comes along the only thing that seems to stop it is a series of court cases which result in fines.

"Let's take a look for a moment at the statutes. The statute makes it illegal to discharge oil in any form from any vessel or coastal installation, or to allow the discharge of oil either accidentally or otherwise, from these same installations, with the following exceptions: The exceptions are basically of two kinds. One is under regulation by the Secretary of the Army, who has designated certain areas where, due to the lack of danger to the public welfare, oil may be dumped. That is one exception. The other is what the statute calls the case of *extremis*. What is meant by that is that if a vessel is in danger of sinking, or if human life is in danger aboard a vessel, and the only way to prevent that danger is to dump oil, or to discharge oil, or to pump out oil, in that case the oil may be discharged, regardless of where the vessel is.

"The penalty for the convictions varies, according to the statute, from between \$500 and \$2500 per offense. Or, if the court feels it better, prison terms can be imposed, for not more than one year and not less than 30 days, on the masters of the guilty vessel, on the owners of the corporation, on the officers of the ship in the master's absence, on pier superintendents, dock workers, or whoever is responsible. This penalty can be secured in admiralty court by attaching the vessel itself. Furthermore, the Coast Guard can suspend

the license of any master of a ship, officer of a ship, and so forth.

"The Coast Guard in its secondary enforcement of this statute may arrest violators, if it feels it necessary, but the arrest can be made only if the Coast Guard officer, or the Coast Guard petty officer (whoever makes the arrest) has witnessed the violation. As for any offense which was not committed within view of a Coast Guard officer or customs officer, or other Coast Guard personnel, no arrest can be made. If the violation has been witnessed the person arrested is then brought before a U. S. commissioner, is arraigned, and from that point on the whole thing is turned over to the United States attorney's office, which handles the prosecutions in each district. Now, in this area, in the Port of New York, and I'm speaking locally because my experience is purely local, there are basically four methods of detection. Most of these have primary duties other than oil pollution. However, while performing these other duties, it is a matter of course to search for oil.

"The most important of these is the relatively new method of a helicopter patrol. In the Port of New York there are Coast Guard helicopter patrols twice a day. They cover, for all practical purposes, all the navigable waterways in and around the Port of New York . . . The reason for the helicopter patrol is primarily one for port security, although lately, more and more of the violations reported under the Oil Pollution Act have been discovered by the helicopters. The reason for this is obvious. The helicopter normally flies at anywhere between 300 and 500 feet directly over the water. From this vantage point it is extremely easy to tell when large quantities of oil are present on the water. If it is heavy oil or bulk oil or crude oil, there will be black streaks on the surface of the water. The lighter oils leave a rainbow pattern on the water. From shipboard or from lower down, it is almost impossible to spot these things accurately, but from up in the air a general pattern can be determined on how serious the pollution is, how much of it there is, and there's usually even a fair indication of where the oil is coming from. On board a boat this detection is obviously impossible."

—TO BE CONTINUED

PROGRAM TO INCREASE THE TRUMPETER SWAN POPULATION

An aggressive plan to increase the productivity of the trumpeter swan flock at Red Rock Lakes Migratory Waterfowl Refuge in Montana and to help establish new nesting flocks of trumpeters elsewhere, was announced recently by Secretary of the Interior, Fred A. Seaton.

According to biologists of the U. S. Fish and Wildlife Service, the decline in the rate of reproduction of trumpeter swans at Red Rock Lakes indicates that the flock is now in a static condition, apparently due to crowding of the range with too many adults and too few young birds present. Because of this reduced productivity, the removal of 40 swans a year from Red Rock—20 cygnets and 20 non-breeding older birds—is being undertaken in order to relieve the overcrowding of the refuge and to help develop breeding flocks of trumpeter swans elsewhere.

Biologists of the U. S. Fish and Wildlife Service will capture the cygnets-of-the-year before they have developed their flight feathers. The adults that are not breeding will be taken from Upper Red Rock Lake (where the swans that are not breeding tend to congregate) while they are flightless during their molting period. When they are nesting, trumpeter swan pairs seek isolation and require about a square mile or more of breeding territory.

Malheur National Wildlife Refuge in Oregon and Ruby Lake National Wildlife Refuge in Nevada—places where there were previous experimental transplantings of trumpeter swans—will continue to be the sites for swan releases. Malheur will get the 20 cygnets-of-the-year in 1957, and Ruby Lake will receive the 20 adults. In 1958 Malheur will get the 20 adults and Ruby Lake the 20 cygnets. This plan of alternation will continue until one refuge has an established nesting flock, by which time the ratio of young-to-adult swans at Red Rock Lakes Refuge should be improved because of the removals. The Fish and Wildlife Service believes that the results of these transfers of trumpeter swans will not be immediately apparent, since the trumpeter does not breed until it is at least four or five years old.

Of the birds transferred each year, a portion will be made temporarily flightless by wing-clipping, and will be held in an enclosure where they will influence the trumpeters, that are able to fly, to stay throughout the winter. The birds which are not wing-clipped will be color-marked so that they may be recognized if they return to Red Rock Lakes Refuge. According to the U. S. Fish and Wildlife Service, feed will be provided all of these birds in open spring-fed ponds throughout the winter.—THE EDITOR

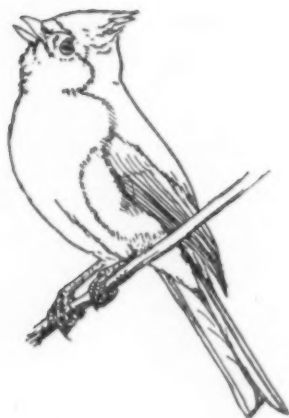
Economic Study Proposed for the Golden Eagle in Texas

According to the National Wildlife Federation, the Texas Ornithological Society has recently urged the Texas Game and Fish Commission to make a study of the economic and ecological status of the golden eagle in that state. Golden eagles in the West are known to feed largely on ground squirrels and jack rabbits. The Texas Ornithological Society believes that the mass destruction of golden eagles in the western part of the state has allowed an increase of range-eating rodents there, with subsequent destruction of range grasses in areas already deteriorated by drouth. M. A. Yramategui of Houston is conservation chairman of the Society.

Readers of *Audubon Magazine* will remember the article, "Alta, My Friend,

the Eagle," a warmly sympathetic account of golden eagles, written by a Texan, and published in our *March-April* 1954 issue. In a footnote to that article we cited the enormous numbers of golden eagles in Texas that have been shot down by men from aircraft, and included a note on the food habits of golden eagles to show the economic waste involved in the destruction of a bird so necessary in the ecology of the western range. The proposed economic study (which should prove the value of the golden eagle in Texas, as studies of its food habits have proved it to be elsewhere) may convince the authorities there of the urgent need to protect the golden eagle before this valuable asset is lost.

—THE EDITOR

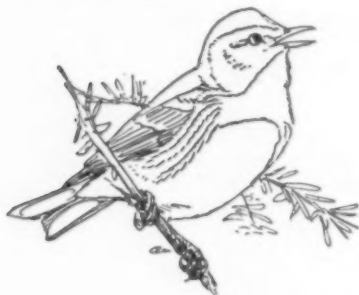


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Attracting Birds



Food Distributors in Tree Trunk and Tree Top

By John V. Dennis

BEFORE much of our feeding station fare reaches its final destination, it passes from bill to bill and from tree to tree in a kind of a bird-game of hide-and-seek. At least half of the common feeding station visitors fly away with food before they eat it, and many cache food away in suitable hiding places. And a trait, quite evident in the vicinity of feeding stations, is that of seeking out and stealing the food which others have hidden. The "thief" may hide the food a second time, and in turn have his cache robbed. The game goes on endlessly, and is most obvious where there is more food than can be conveniently eaten on the spot. The competition among birds for hidden stores is often greater than that for food freely available. To the human spectator it is all highly entertaining, and birds seem to get a big kick out of it, too.

One winter, when I was living near Leesburg, Virginia, I was watching more closely than usual the activities of birds at my feeding station. I found that one-third, or 6 out of 18 species of birds present, deliberately cached away a portion of the food they took. Several others commonly flew away with food, but I was unable to determine whether or not they hid a portion of it.

Some of the food storers used rather devious hiding tactics, while others seemed intent only upon storing away as much food as they could in the shortest possible time. For downright fussiness and slyness, the chickadee takes the lead. In their movements in and about the feeding station, chickadees show not the slightest indication that they are

interested in anything but the immediate eating of suet or sunflower seeds. But keep your eye upon the chickadee with a sunflower seed in its bill. Does it always put the seed between its toes, pound apart the husk, and eat the contents? The impression is that this is the inevitable routine once the bird has found a suitable perch. But time and time again I have seen an elusive chickadee slip away between the trees with a seed still in its bill, the husk removed perhaps, but the coveted interior still intact.

Nothing further about the food-storing of birds would I learn if I continued to watch at the feeding station. But adjacent to our house were the wooded slopes which border the Potomac River. Among the oaks and hickories I was sure to find a number of chickadees. Some were returning to the feeding station, and from long habit they stopped every now and then to examine twigs and bark crevices. Soon I found one with a sunflower seed in its bill. The bird flew to a dead branch, and just when I thought it was about to deposit the seed, it moved on to another spot. This performance might be repeated several times. At last the bird picked one of the most unlikely spots imaginable, a broken off twig no bigger than my finger on an outermost branch of an oak tree. It quickly tucked the seed into the rotten wood. Then, before I quite knew what had happened, the chickadee had disappeared.

The white-breasted nuthatch, another frequent visitor, does not take such painstaking efforts. Although an even more confirmed food hoarder, the nuthatch seems anxious to get its mission

Turn to Page 38

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over as quickly as possible. No elaborate precautions are taken by it to mislead other birds. Suet or sunflower seeds are simply taken off to the nearest convenient cavity, promptly hidden, and then the nuthatch is back for more. Sometimes the nuthatch goes no farther than the rustic supports of the bird feeder to make his cache. Thus, through time-saving short-cuts the nuthatch can deposit far greater quantities than the chickadee. In one hour a male white-breasted nuthatch carried away 38 pieces of suet. It is safe to say, however, that the nuthatch loses the greater proportion of his deposits to other birds, almost as soon as they are made. There are too many sharp-eyed birds in the vicinity of the feeding station to permit the nuthatch to get away with such clumsy methods.

Almost all the visitors seem to prefer "stolen fruits" to that which they can obtain effortlessly on the feeder. Among the most proficient of these food finders is the brown creeper. A specialist in reading any minute signs of food on tree bark, the creeper finds it especially productive to search trees in the vicinity of the feeder. Hour after hour I have seen creepers tirelessly scanning the trunks and branches of nearby oak trees. No sooner has the uppermost limits of one tree been reached than the creeper flies down to the foot of another. Lengthy pauses by it, on the trunk, indicate that a cache has been uncovered. At times the suet holder or peanut butter stick is visited by the creeper. But let any other bird appear and the creeper makes a nervous retreat. Sometimes the creeper drops to the ground at the base of the tree-supported, feeding tray to pick up tidbits. But this is unnatural to it, and the creeper is soon back at his endless task of searching the tree trunks.

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Two of my regular bird visitors had the habit of storing food under leaves or in the ground. This was perhaps an adaptation to circumvent the prying eyes of tree-foraging birds such as chickadees and nuthatches. I was prepared to find this habit in the blue jay. Jays everywhere are in the habit of burying surplus food. The scrub jay in California sometimes goes so far as to bury bread, or even marbles, but it was a surprise to find that tufted titmice also hid food in the ground. All during the winter I had watched the titmice making away with a disproportionate share of the sunflower seeds. Like the chickadees, they often placed a seed between their toes and with hammer-like blows split the husk apart to get at the interior. But just as frequently they disappeared into the woods, the seed in their bills. After repeated watching I discovered that their special technique was to drop to the ground, quickly place the seed under some leaves, and as quickly depart.

I have no doubt that this method was effective in throwing off would-be cache robbers. Did the titmice ever retrieve any of these hastily deposited stores? It seems unlikely that they can be very successful at it, if they do. On several occasions, after watching a titmouse place a sunflower seed, I have gone to the exact spot and only after long search have I been able to find it under the leaves and humus. Blue jays, I suspect, are more successful in this respect. They choose more open places where there are familiar landmarks—a stump, a rock, or a fallen log. Like the titmice they make rapid inroads upon my feeding station supply. But in my experience they are much less regular in their visits. One winter I did not see any at the feeder for more than two months.

Part of the blue jay's reputation for so-called "greediness" lies in an ability to carry away large quantities at a time. A jay will simply sit upon the feeder and cram all it can into its throat. When its throat is filled, it will hold whatever else it can in its sturdy beak. Maximum-load capacity for sunflower seeds, I found, is around 10 or 12. Usually fewer are taken at a time, but repeated visits by a flock of jays can quickly deplete my feeder. On one occasion I was able to deprive a jay of his loot. After catching him in a bird-banding trap, out of curiosity, I opened his bill and found 66 pieces of wheat, two kernels of corn, and many smaller pieces of corn in his mouth and throat.

During the winter of 1955, at our Leesburg, Virginia feeding stations, we had besides our resident Carolina chickadees, large numbers of black-capped chickadees from the North. They were just as persistent as the Carolina chickadees in carrying off sunflower seeds. From banding them, I judged that we

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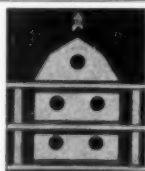
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had about 50 individuals of both species at the feeders daily. On the basis of one visit by one of them every 3.6 minutes (an average maintained by a tailless chickadee), the whole flock would make away with some 8,500 sunflower seeds in a day. I believe that this figure is not at all too high. It was astonishing how quickly the large dried sunflower heads that I put on the feeders were cleaned out of seeds, chiefly by chickadees.

It was also a winter for red-breasted nuthatches. Intensely active and not likely to overlook a food supply, the nuthatches gathered at places wherever their favorite natural foods were available. Sometimes they visited the feeding stations, but most of their efforts were devoted to removing seeds from the cones of nearby Virginia pines. A large proportion of these seeds were being carried away to deciduous trees where, I suspected, they were being stored.

I have yet to mention one other confirmed food storer among our visitors—the red-bellied woodpecker. Every winter at least two would appear. They came individually, fed at length, and usually disappeared with a bill full of food. Occasionally they deposited food in nearby trees, but more often the urge seemed to be to take it far away from prying eyes. From observations in Florida, I knew that both the red-bellied and red-headed woodpeckers were in a class by themselves as food storers. The two species seemed to vie with one another when it came to gathering up as many of the millions of acorns which covered the ground every fall as they could. The red-heads went after the acorns in relays and would not tolerate the presence of a red-bellied woodpecker in their vicinity. All day long they would busily tuck acorns away in any handy crevice. The red-bellied woodpeckers, on the other hand, were extremely fussy. I watched one with an acorn in its bill examine no less than six live pine trees and one dead one in looking for a suitable food-storing cavity. Time and again the acorn was carefully placed, and the bird from all appearances seemed satisfied, and on the point of departure. But, *no*, some inner prompting stopped it. The acorn was extracted, and off it went to another tree.

The prodigious food-storing activities I saw in Florida can be matched by those of a western species—the California woodpecker. This species has the habit of excavating cavities just large enough to accommodate an acorn. W. L. Dawson* estimated that no less than 50,000 acorns were stored in a single enormous pine tree. That the habit had its origin in the remote past is proved by the discovery of woodpecker deposits in the heart of ancient redwoods. In one such

* "The Birds of California," Vol. II.

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tree there were 1,080 rings between a
cavity containing six acorns and the
outside of the tree.** The acorns had
been placed about 802 A.D.

It is not always clear whether the
food storers come back later to sample
their supplies, or whether storage is
largely a matter of using up surplus
time and energy. In the initial stage I
believe that food storing is an incidental
sort of activity in which no conscious
planning by the birds is involved. The
habit originates when there is a surplus
of acorns or seeds which must be carried
away to be opened.

Downy woodpeckers at my feeding
station seemed on the threshold of learn-
ing how to store food. I concluded this
after watching several carry away large
pieces of suet to convenient cavities.
The suet was pounded apart and usually
eaten at these feeding spots, but some
was inevitably left behind. I was not
able to determine whether the residue
resulted from untidiness or conscious de-
sign by the downies. Sunflower seeds
were even more likely to be carried
away. The downies were more inclined
to go after the seed-heads of sunflowers
in the garden than those placed upon
the feeding tray. On more than one oc-
casion I saw downies carrying sunflower
seeds from the garden to nearby fence
posts. The seeds, firmly wedged into
crevices, were far easier to open than
on the sunflower plant. On examining
the posts I found that small deposits of
seeds had accumulated in several of the
crevices. Apparently these seeds had fal-
len out of reach of the feeding birds.
Perhaps they would later be retrieved
by white-footed mice. Or, it is quite pos-
sible that some would later be reclaimed
by the downies themselves.

The downy woodpecker, which goes
back to food left-overs, might conceiv-
ably learn to put enough aside for a
stormy day. Such thought processes, how-
ever, are slow in developing, and our
downy would not be likely to learn this
unless preceding generations had made
progress in the same direction.

Birds, whose diet is limited to small
seeds and insects, do not become food
storers. But certain of those with the
ability to open objects with hard outer
coverings, do. Well represented in this
group are jays, woodpeckers, titmice,
nuthatches, and nutcrackers. The food-
storing habit may not be common every-
where within the range of a species. In
any one locality it may be limited to a
few individuals. It is a seasonal activity
which reaches its peak when a supply of
mast—acorns and pine seeds—is avail-
able. Then, inspiration seems to come
from the activity of many woodland
creatures hurrying to and fro, each with
food in its mouth, and not from a spe-

cific design to store food for future use.
It is largely a game, each bird or mam-
mal trying to outdo the other, and each
intent upon pilfering the stores of its
competitors.

The next stage—that of reclaiming
one's own stores after the harvest is
over—seems to be beyond the ability of
many of the food storers. Birds, in which
the food storing trait is not highly de-
veloped, probably overlook most or all
of their stores. I suspected that this was
true of the tufted titmice at my feeder.
Also, if there is no need for the stores,
the effort is wasted. In Florida I saw no
evidence that the red-headed wood-
peckers utilized any of their vast sup-
plies. In April, after living in an oak
grove all winter, the birds would scatter
far and wide. The thousands of acorns
they hid would either be eaten by other
animals or would lie rotting through the
summer. If the red-heads came back in
the fall they would turn their attention
to a new supply of mast and not their
former deposits.

Yet I know of many instances of birds
seeking out their hidden or stored food
supplies. Mrs. Joseph Birchett of Tempe,
Arizona told me how a Gila woodpecker
repeatedly came back to a hollow cactus
to retrieve dates and pecans it had hid-
den there earlier. G. S. Agersborg of
Vermillion, South Dakota is quoted in
Bent* in respect to a red-headed wood-
pecker which came back for grasshoppers
it had placed earlier in a fence post. In
Florida, even when mast was plentiful,
I noticed that red-bellied woodpeckers
sometimes seemed to seek out their old,
stored food supplies. In January I saw
a female red-bellied woodpecker, with-
out food in her bill, carefully searching
the top and underside of a cypress-log
fence. From there she flew to a garage
and began a minute inspection of the
tin roofing at a point beneath the eaves.
Finally she flew away without finding
food. I was more successful, however,
and found a live-oak acorn carefully hid-
den under a fold in the tin. This bird's
memory had been good enough to bring
it back to the site of a former cache, but
it had hidden the acorn so cleverly that
it could not find it.

Hidden stores did not remain long
concealed in the vicinity of my Virginia
feeding station. Whenever I failed to
replenish the sunflower seed supply, my
usual visitors took to searching bark
crevices, stubs of broken off branches,
exposed roots at the base of trees or
other likely places. More than once I
saw a chickadee or nuthatch turn up
with a hidden sunflower seed, but I had
no way of knowing whether they had
found their own deposits or those of
other birds.

In all this activity I detected a sen-

** See, *Pacific Discovery*, Vol. III (4): 29-30,
1950.

* See pp. 200-201, Bulletin 174, United States
National Museum.

sible, if unpremeditated plan to provide for bad times—prolonged rain or snow—or even the possibility that the feeding station itself would cease to provide for hungry birds. Also I noted that many birds which seldom if ever visited the feeding station obtained a share. So did many of the small mammals. I was glad to know that my food was distributed so widely and to so many of the forest inhabitants. The food storers were providing a real service, and, for this reason, I did not begrudge them the extra quantities of food necessary to keep them supplied. THE END.

LETTERS—Continued from Page 8

graphed. It was not hurt and did not struggle to free itself, but finally ran into the brushy woods bordering the road. I would appreciate it very much if someone would identify it for me.

RUTH GREENE

Waterford, New York



A young ruffed grouse poses for its picture in central Vermont. Photograph by Ruth Greene.

The bird in Miss Greene's photograph, as many of our readers will recognize, is a ruffed grouse. Sometimes these wild game birds become unusually fearless. This may have been a young grouse which had not yet learned to fear mankind, or it might have been one that had been raised as a pet and had escaped to the woods.—The Editor.

Another Enthusiast for the Audubon Camps

When I renewed my membership in the National Audubon Society this year, I doubled my contribution, and became a sustaining, instead of a regular, member.

There are two reasons for this. One is the inspiration received from the Audubon Camp of California, which I attended last summer. Under the leadership of Bill Goodall and his dedicated staff of naturalists, we privileged campers emerged made over, feeling—as Louis Halle puts it—"members of the universe."

The second impetus to my desire to increase my support is the dynamic service given by the personnel—Mary

Jefferds and Phyllis Lindley—of the Berkeley headquarters. A frequent visitor there, I am always amazed and delighted at the educational program constantly in progress—both through materials displayed and the spoken word. Young and old, layman and expert, come to look and remain to learn. Even the briefest contact with this center is an enriching experience. Long may they reign!

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Continued on Page 46

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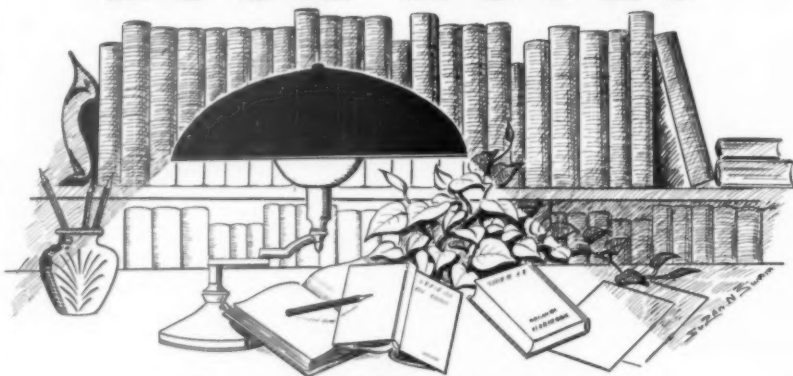
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BOOK NOTES



By Monica de la Salle, Librarian, Audubon House

AMERICAN WATER AND GAME BIRDS

By Austin L. Rand, E. P. Dutton & Company, New York, 1956. 12¼ x 9¼ in., 239 pp. Illustrated. Indexed. \$11.50.

This beautiful volume can be warmly recommended on all counts. The numerous photographs in color and black-and-white are unusually well reproduced, the silhouettes show Mr. Ugo Mochi at his best, and the text giving general information on families and life histories is clear and pleasantly readable, as well as reliable. The author is chief curator of zoology at the Chicago Natural History Museum.

MAN'S ROLE IN CHANGING THE FACE OF THE EARTH

Edited by William L. Thomas Jr., University of Chicago Press, 1956. 9¼ x 7 in., 1,192 pp. Illustrated. Indexed. \$12.50.

This important book is the result of an international symposium of scientists held last year at Princeton and sponsored by the Wenner-Gren Foundation for Anthropological Studies. Over 50 scholars have contributed papers summarizing from various points of view the "good and bad" that man has done to the world around him. The volume is divided into three parts: the first, "Retrospect," covering historical aspects of man's dominance of the earth; second, "Process," or man's impact on the sea, fresh water, soil, plants, and animals through exploitation of natural resources, agriculture, and industry, including the ecology of wastes; finally, "Prospects," dealing with the future—limitations of the earth, growth of human population, new sources of energy, and the philosophical, esthetic, ethical, and legal aspects of man's relations to nature. This summary can give but a slight outline of the many subjects treated, and which everyone interested in conservation will find invaluable for informative reading and as a reference. Bibliographies are included at the end of each chapter.

COMMON EXOTIC TREES OF SOUTH FLORIDA (DICOTYLEDONS)

By Mary Franklin Barrett, University of Florida Press, Gainesville, 1956. 9¼ x 6¼ in., 414 pp. Illustrated. Indexed. \$8.50.

"The southern half of the Florida Peninsula, along with the Florida Keys, forms an open-air museum of trees from all the continents that have tropical or subtropical climates." Following a resumé of the characteristics of dicotyledonous plants, are keys for identification and detailed descriptions (a number with accompanying drawings) of these introduced trees, with data on their original distribution, where they can be seen in Florida, their uses and common names, classification, and references. There is also a list of "sight-seeing [tree] trips in greater Miami."

BREEDING AND OTHER HABITS OF CASQUED HORNED BILLS

(*Bycanistes subcylindricus*)
By Lawrence Kilham, Smithsonian Miscellaneous Collections, Vol. 131 #9, Washington, D. C., 1956. 9¼ x 6½ in., 45 pp. Illustrated. Paper (Order from Smithsonian Institution, Washington 25, D. C.)

Among the many strange-looking creatures that nature has produced, the hornbill is one of the most spectacular. Adorned with a large appendage as the name indicates, the habits of hornbills are as unusual as their looks. The female, while brooding, is walled up for four months in a nest hole, complete with "escape attic"—escape from predators, that is, not from the nest itself. During this time she depends entirely on her mate for her own and her young's food. The author of this highly entertaining booklet, as a visiting scientist at the Virus Research Institute at Entebbe, Uganda, spent his leisure time observing the behavior of this African species for over a year. His descriptions of antics and mannerisms are no less than delightful.

FLOODS

By William G. Hoyt and Walter B. Langbein, Princeton University Press, 1955. 9½ x 6¼ in., 469 pp. Illustrated. Indexed. \$7.50.

This is a comprehensive account of floods in this country since 1543. The authors, members of the U. S. Geological Survey, analyze the origin, damage, problems, and projects of every major basin in the United States and present a history of floods by years and streams. They outline the legislation enacted and suggest certain changes, as they appraise the various methods of flood control. This should be a useful reference book.

KEY TO THE NAMES OF BRITISH BIRDS

By R. D. Macleod, Sir Isaac Pitman & Sons, Pitman House, Parker Street, Kingsway, London, England, 1954. 8¾ x 5½ in., 67 pp. 10/6 (about \$1.50).

For those with an inquisitive turn of mind, this little book will be an interesting approach to scientific nomenclature and its purpose, systematic classification. After outlining briefly and clearly the form, pronunciation, gender, and origin of scientific and common names, the author gives alphabetical lists containing the Greek and Latin etymology with information on how each name came to be coined.

TOPSOIL AND CIVILIZATION

By Tom Dale and Vernon Gill Carter, University of Oklahoma Press, Norman, 1955. 8¾ x 5¾ in., 270 pp. Illustrated. Indexed. \$3.95.

Many theories have been advanced for the rise and fall of civilizations. In this book the authors consider history in the light of man's relation to the sustaining land. From a world-wide survey, a picture emerges of use and misuse of the soil and the subsequent decline when conservation practices were disregarded or abandoned. The very readable text is supplemented by maps and many photographs.

THE RIVER OF LIFE

By Rutherford Platt, Simon & Schuster, N. Y., 1956. 9¼ x 6¼ in., 302 pp. Illustrated. Indexed. \$5.00.

Here is a popular and entertaining approach to the "believe-it-or-not" aspects of natural history, all the way from amoebas to elephants, and including plants, insects, and fishes. Through four sections, bearing the headings, "Just Outside the Window," "Events Beyond Time," "Animated Tools and Equipment," and "Secrets of Surviving," the reader explores with Mr. Platt the variety, and also the wonderful rhythm and unity of living things.

MEN AND GARDENS

By Nan Fairbrother, Alfred A. Knopf, New York, 1956. 9½ x 6½ in., 271 pp. Illustrated. \$5.00.

When winter makes planting chores a pleasant memory, when city dwellers dream of the country, when leisure comes after studying seed catalogues for next spring, then is the time to take up this charming book. It is a history of gardening from the earliest days, the world over. In China, in ancient Greece, and Rome, in France and in England, we see how the concept of gardens and gardening has changed from a patch of vegetables to the elaborately tapestried plots of Versailles and Hampton Court. Many authors are quoted, and the one complaint to be made is that a badly-needed index is lacking.

MORE BIRDS TO DRAW

By Raymond Sheppard, Studio-Crowell, New York, 1956. 7 x 5¼ in., 64 pp. Illustrated. \$1.95.

Readers of the "Book Notes" of Audubon Magazine will be familiar with Mr. Sheppard's first book, "How to Draw Birds." In this second small volume on the same subject they will find suggestions on how to draw more "difficult" birds—penguins, pheasants, parakeets, and kiwis, among many others—as well as on baby birds, nests, rookeries, and

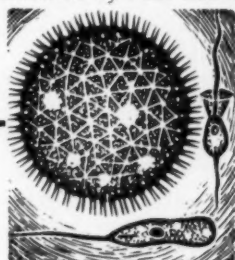


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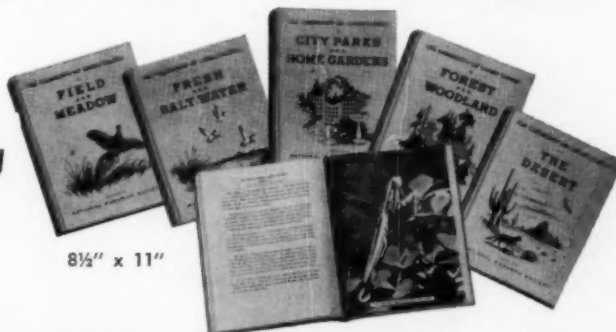


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DAYS WITH BIRDS

By V. G. L. Van Someren, Chicago Natural History Museum (Fieldiana: Zoology, Volume 38), 1956, 9¼ x 6 in., 519 pp. Illustrated. Indexed. Paper, \$8.00.

This is an important contribution to African ornithology. It was originally a long manuscript on the birds observed by Dr. Van Someren in his Kenya Colony sanctuary at Ngong. While there are no descriptions, each species is treated separately and much information is given on "home life," habitat, eggs, nests, young, food, song, behavior, and "enemies." Each account is highly readable and avoids technical terms. The numerous photographs, as well as an index of English and Latin names, make it an excellent reference book.

IOWA FISH AND FISHING

By James R. Harlan and Everett B. Speaker, Iowa Conservation Commission, Des Moines, 3rd edition, 1956. 9¼ x 6 in., 377 pp. Illustrated. No index. \$2.50.

This enlarged and revised edition is in many ways outstanding. Beautifully illustrated in color by Maynard Reece, well designed and excellently printed on good paper, it is offered at remarkably low cost. General information on each family of fishes is included, with common and scientific names, distribution in Iowa, descriptions, food habits, life history, and data on abundance for each species found in the state. In addition, there are chapters on anatomy, fish foods, bait, fishing tackle, and angling. Finally, keys for identification are followed by a glossary and a short bibliography.

HOW TO ENJOY YOUR WESTERN VACATIONS

By Kent Ruth, University of Oklahoma Press, Norman, 1956. 8¾ x 5¾ in., 422 pp. Illustrated. Indexed. \$4.95.

With this book in hand, there is no possibility that anyone would be tempted to travel "like a trunk." The regions to which it is a guide extend from Montana to New Mexico and westward to the Pacific, and include the Texas Gulf Coast, the Ozarks, the Black Hills, and Minnesota. There is information on what to see (including national parks, refuges, and wilderness areas), what to do (sports and sightseeing), accommodations and services (with some idea as to what they cost), highway routes, and other transportation facilities, together with some background data, good regional maps, and superb photographs.

MEMOIRS OF A BIRDMAN

By Dr. Ludwig Koch, Phoenix House, England, 1955 (available through Charles T. Branford, Boston). 8¾ x 5½ in., 188 pp. Illustrated. Indexed. \$3.75.

When Dr. Koch was about three years old he was taken to see Franz Liszt. When he was eight he made, on a toy phonograph, the first bird-song recording ever produced, that of an Indian shama in his private zoo. Thus began a career which has combined in unique fashion a concern with music on the one hand and animals, especially birds, on the other. Through it run many great names, especially from music and politics, and a succession of the kind of adventures which could happen only to a dedicated bird-watcher, or more precisely bird-hearer (unlike most people, Dr. Koch evidently does not regard a bird as really *seen* until he has heard it, even in broad daylight). His difficulties in recording the voice of the Manx shearwater on the Isles of Scilly were, for example, so many and arduous that they became the subject of a ballad beginning, in proper mock-Border style, "Bold Ludwig Koch from London came . . ." To thousands of listeners to the B.B.C. his name is a familiar one. For American readers this memoir will be a welcome introduction to a vigorous personality, whose inclination to hold strong opinions (whether of central heating or the Nazi regime) and to express them with candor, adds its particular flavor to a naturally interesting subject.

• • •

JUNIOR BOOKS

By Amy Clampitt

Asst. Librarian, Audubon House

MR. HARE (7-10)

Written and illustrated by Gardell Dano Christensen, Henry Holt and Company, New York, 1956. 8¼ x 6¼ in., 64 pp. \$2.25.

The animals this descendant of Aesop's hare meets when he finds himself involved all over again in his famous race with a turtle are quite shamelessly anthropomorphic. Mrs. Skunk, who lives in "the finest unkept house in the whole community," has what sounds very like an inferiority complex. She dislikes Mr. Fox, who is the instigator of the whole thing; so does nearly everybody else, with the exception of Mrs. Deer, whose weakness is committees and who says, at least, that Mr. Fox is "by far the most charming member of our community." The author, who has studied animals for some years, still thinks they are like people. He also knows how to tell a story, and the suspense he maintains

up to the very last page, as well as the very up-to-date moral, make his fable quite as interesting to adults as to the children for whom it was ostensibly written.

DIPPER OF COPPER CREEK (11-16)

By John and Jean George, E. P. Dutton and Company, New York, 1956. 8 x 5¾ in., 184 pp. Illustrated. \$3.50.

Though this is a work of fiction, the water ouzels, Canada jays, and other wild creatures involved behave entirely after the manner reported in scientific monographs. They are nevertheless treated with an imaginative sympathy which makes them, as characters, really more convincing than the old prospector and his teen-age grandson who are their human neighbors. Occasionally, the scientific accuracy may be a little intrusive, as when we are told of the "chain of hormones" that sends the dipper back to her nest; but the writing generally has grace, and the wild, lonely atmosphere of high mountain streams is evoked both in the description and in Mrs. George's illustrations.

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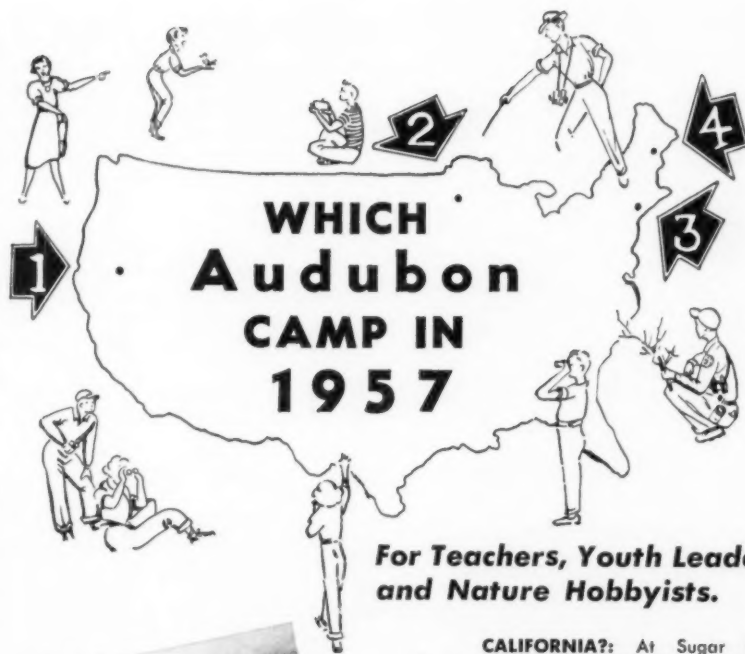
By Bessie M. Hecht, Random House, New York, 1956. 9¼ x 6¾ in., 143 pp. Illustrated by Rudolf Freund. Indexed. \$1.95.

This is an especially satisfying addition to a generally attractive series. An engaging balance between informality and objectivity, combined with a style as graceful and lively as it is clear, should interest practically anybody in these reptiles, and enthrall those youngsters who just naturally like them. Mrs. Hecht further has the gift of anticipating what her readers are likely to want to know, notably in the matter of how our knowledge of the subject has been acquired—an aspect of science which is still too often neglected by the writers of books for young people.

DAVID AND THE SEAGULLS (6-10)

Photographs by Yolla Niclas, text by Marion Downer, Lothrop, Lee and Shepard, New York, 1956. 10¼ x 7½ in., unpagged. \$3.00.

The David of this story is a real boy, who spends his summers on Monhegan Island off the coast of Maine, and who has found for himself the kind of project children 10 and younger dream about—he rescues injured and orphaned seagulls and then sets them free. The story is told mainly in photographs, which besides showing David and his birds, convey poetically the fogs and storms, tidal pools, starfishes, and friendly lobstermen that surround them on their island.



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Mr. Adolf Krehbiel sighting his telescope with gun-stock mount.
Photograph by Wheatley.



RED SQUIRRELS ARE GOOD COMPANY—Continued from Page 29

with a porcupine quill in the end of its nose. This probably caused it much pain, but insertion of one quill did not appear to result in the severe general distress that was so obvious with the first squirrel. This one continued to come regularly to the feeding-station, where it took food as best it could. After a few days, the quill had disappeared from its nose.

Prior to these experiences, we had not realized that a red squirrel ever ventured close enough to a porcupine to be wounded by its quills. We still have no idea how it comes about.

In what way do the squirrels become rid of the quills? It has been suggested that part of the quill is absorbed by the squirrel's body and that the rest then drops off or is pulled off by the wounded animal. While that is one possibility, the impression that we received from our observations was that marked sup-

putation around each quill was the effective process, which rid the squirrel of the quill. If a quill became surrounded by sufficient matter, it presumably would lose contact with tissues and pass out unhindered from the wound. Its exit would be assisted by any friction of the quill with surrounding objects; perhaps by the squirrel's deliberate efforts to remove it.

The red squirrels that share our home area with us provide a great deal of pleasure, and any annoyance they have caused us has been trivial and fleeting. Can we expect the wild creatures about us to furnish only recognized benefits? In our relations with them, as in relations among people, there should be tolerance, patience, and a reasonable spirit of give-and-take. We enjoy our squirrels and would not be without them. They are good company. —THE END.

Your CHILDREN

By Shirley Miller

THE GOLDEN PLOVER—A Quiz Project for Audubon Junior Clubs

AT THE 52nd Annual Convention of the National Audubon Society, we originated a quiz project for presentation during the portion of the program devoted to the Audubon Junior Clubs. A description of this project has been prepared for those who may wish to use it in their own communities. I have given a brief summary of it here. Those who would like copies may get them by writing to me at Audubon Junior Clubs, 1130 Fifth Avenue, New York 28, N. Y.

As the migration route of the golden plover is one of the most fascinating in the avian world, this was chosen for the project. However, it may be adapted to other interesting migration routes, also, such as that of the arctic tern, the ruby-throated hummingbird, the bobolink, and the scarlet tanager.

For the convention project, a large map of the western hemisphere was cut out of "homosote," painted a light green, and mounted on a rectangular piece of "homosote," 6' x 10', painted blue. Both the southern and northern migration routes of the golden plover were indicated on this map by a broken line, painted orange. This map was placed on the platform where the 1956 convention audience could see it.

Two markers were also cut out of "homosote," representing the golden plover in flight. These measured about 6" long, and were painted the color of the golden plover in its breeding plumage. A piece of adhesive tape was glued to the back of each marker (sticky side out) so that they could easily be moved along the broken lines of the migration routes as each question in the quiz was answered correctly. At the start of the project one bird marker was placed at the northern end of the migration route, and the other one was placed at the southern end of the route.

How to Play the Game

A group of 14 children, divided into two teams of seven each, plus an adult Quiz Master, participated in the project. One child on each team was selected as Scorekeeper for his side. His job was to move the bird marker along the broken line of his team's migration route as the questions given his team

were answered correctly. As the map was high, ladders were provided for each of these Scorekeepers.

Team #1 was assigned the southern migration route, from the Arctic down over the Atlantic Ocean to Argentina. Team #2 was assigned the northern migration route, from Argentina northward over the Gulf of Mexico and up the Mississippi Valley to the Arctic. There were the same number of units in each of the broken lines representing the migration routes.

The Quiz Master started by asking the first child on Team #1 the first question of the quiz. If that child answered correctly, his Scorekeeper moved his bird marker forward one place on the broken line of his migration route. If he an-

swered incorrectly, the bird marker was not moved, and the question was given to the first child on Team #2. If the child on Team #2 also failed to answer correctly, the Quiz Master gave anyone in the audience opportunity to answer the question. The person in the audience answering correctly was given the opportunity to designate which team he wished to get the credit for his correct answer, and the Scorekeeper on that team then moved the marker forward one place on that team's migration route. The quiz continued, with each child, in turn, being given an opportunity to answer the questions, until one team reached the end of its migration route and was proclaimed the winner.

—THE END

Children on convention platform playing the golden plover game. Photograph by Charles Mohr.



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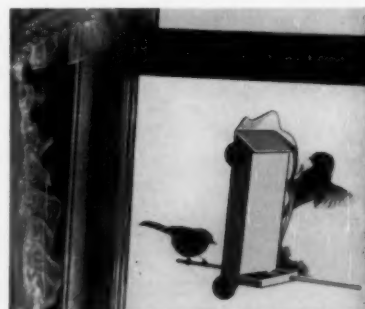
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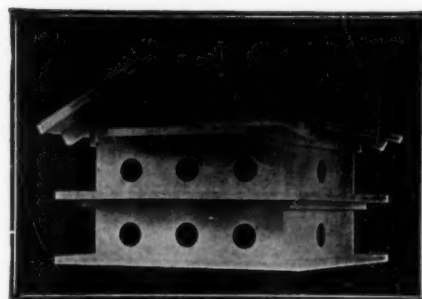
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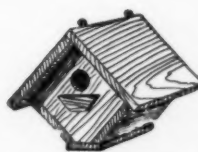
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